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Remarks
ON
PULMONARY SYPHILIS.*

BY FRANK E. TYLECOTE, M.D., D.P.H. MANCH., F.R.C.P. LOND.,

HONORARY PHYSICIAN TO THE MANCHESTER ROYAL INFIRMARY; LECTURER IN CLINICAL MEDICINE IN THE VICTORIA UNIVERSITY OF MANCHESTER.

THE very existence of pulmonary syphilis, except in infants, is denied by some authorities. Syphilologists regard it as common, but tuberculosis physicians think it is very rare or non-existent. Yet in this, as in many other things, I hold with Ovid that *in medio tutissimus ibis.*

When Sir James Kingston Fowler published in 1898 the first edition of that most valuable text-book of chest diseases, Fowler and Godlee's "Diseases of the Lungs," he could only find in the museums of the London medical schools 12 examples, two of them doubtful, of acquired syphilis of the lungs. He therefore regarded the condition as a very rare one indeed, but it must be remembered that he was dealing only with post-mortem specimens, and that the Wassermann reaction had not then been discovered.

I describe here 16 cases, 12 of them from my own experience; I have seen many more, but I have never attended a post-mortem on a known case of pulmonary syphilis. This goes to show that any estimate of incidence made on post-mortem results alone is highly fallacious.

There are two specimens of pulmonary syphilis in the Manchester University museum, one from the Delépine and one from the more recent collection. Dr. R. C. Kirkwood (U.S.A.) published last year[1] in the *American Review of Tuberculosis* an article on the diagnosis of pulmonary syphilis,† in which he discusses the association of pulmonary syphilis with pulmonary tubercle, and concludes that it occurs in 1 out of 11 of all sanatorium cases in America. An interesting contrast appears between an intravitam study written since the Wassermann test came into common use and Fowler's post-mortem figures.[2]

A county tuberculosis officer of my acquaintance detected 12 cases in 8000 patients seen by him in eight years—i.e., 0·15 per cent. He agrees with me that the percentage will be much higher when the Wassermann test becomes the rule in all negative sputum cases, as well as in atypical positive sputum cases. I estimate the incidence at about 1 per cent. of the sanatorium cases in this country, and it is interesting to see that two observers in other countries give figures which support this. J. T. Conner did post-mortems on 112 syphilitic cases in America,[3] and found it in 10 per cent.; he excluded tubercle in all of them. Petersen[4] did post-mortems in 88 syphilitic cases in Copenhagen, and found it in 11. The National Council for Combating Venereal Disease (British Social Hygiene Council) stated that syphilis affects 1 in 10 of the hospital population of the country. If this figure and those of Conner and Petersen are accepted, the estimate of 1 per cent. is probably correct.

A classical case was recorded by the late Dr. R. J. M. Buchanan, of Liverpool[5]; she went the round of the Manchester physicians, and was 19 years under observations before he made the correct diagnosis by finding spirochætæ in the sputum. She was known as the "girl with the ducks in her chest." Another case reported by Buchanan was one of the earliest cases of syphilitic lung, in which the effect of anti-syphilitic treatment was demonstrated by periodic X ray plates.

Of the 16 cases of whom I have notes, 11 were male and 5 female. The average age of the males was 50·82 years and of the females 47·00. The chief reason for this advanced average age is that fibrosis is the main feature and takes time to develop.

PATHOLOGICAL CHANGES.

1. *Infantile pulmonary syphilis* has been well investigated and occurs in two forms:—

(*a*) Interstitial or white pneumonia of the fœtus, where the alveolar walls are infiltrated, and the alveoli blocked with desquamating epithelial cells. The condition is incompatible with life for more than a few hours.

(*b*) Gummata alone or combined with (*a*). The children are usually stillborn and exhibit other syphilitic lesions in which spirochætæ are found.

2. *Acquired pulmonary syphilis* has five forms:—

(*a*) Syphilis pulmonum, a combination of areas of fibrosis starting from root or base, possibly with ulcers of trachea, larynx, or bronchi, sometimes with resultant bronchiectatic or gangrenous cavities, with or without gummata (which are rare in adults).

(*b*) Chronic interstitial pneumonia due to syphilis; a generalised condition; a fibroid phthisis in a syphilitic subject; not tuberculous.

(*c*) Syphilitic gummata.

(*d*) Lesions due to deficient blood-supply, the results of syphilitic arterio-sclerosis, with infarcts, pulmonary emboli, serofibrinous pleurisy.

(*e*) A pulmonary arterio-sclerosis with great œdema, described by Sir Leonard Rogers among Bengalese of 20–40 years of age, chiefly females.[6] He believes it to be specific in origin.

The Delépine specimen came from a female, aged 36, and shows fibrous induration largely replacing the tissue of the right lung, in which there are also bronchiectases and overlying chronic pleurisy. The liver is deformed by contraction after gummata, and other small gummata are also seen in both its lobes. The gummatous mass has passed through the diaphragm into the lung, a very good example of the affection of multiple organs with tertiary syphilis. Histological preparations from this specimen show the difference from tubercle of the lung, the peribronchial fibrosis, thickened vessels, and comparative scarcity of giant cells.

SYMPTOMATOLOGY.

Practically all the symptoms and signs of general chest disease occur in pulmonary syphilis. Though the term is usually applied to the tertiary stage, it must not be forgotten that a catarrh of the air passages, with signs of bronchitis, may occur in the secondary stage as an exanthem, possibly with pyrexia, the so-called "syphilitic fever," a somewhat rare condition. Of the symptoms which are outstandingly and unexpectedly prominent in pulmonary syphilis, the first is *dyspnœa.* In some cases it depends on inspiratory obstruction, as when there is tracheal or bronchial stenosis secondary to ulceration, or, more rarely, to pressure from without by a gumma. In most cases it depends on peribronchial fibrosis and sometimes the paroxysms may be asthmatic: this is a possible explanation of the good results of treatment by iodide of potash. As fibrosis takes time to develop it will not be marked in the young. Dyspnœa of more sudden onset may be due to syphilitic myocardial failure.

Hæmoptysis.—Though hæmoptysis only occurred in one of my cases, yet the literature quotes it as common. Those cases in which it has occurred are cases either of ulceration of the trachea or bronchi or of bronchiectasis developing as a result of such ulceration. It is rarely, if ever, fatal, but may recur.

Blood Pressure.—It is not usual in syphilis of the lung to get the lowered pressure customary in tubercle and malignant disease, so a normal or a slightly raised blood pressure is a point in favour of a diagnosis of syphilis.

Bronchiectasis.—Where bronchiectasis has resulted all the bad features of that disease are encountered, such as pyrexia due to retained secretion or to broncho-pneumonia, loss of weight, and general decline. In

* The substance of a post-graduate lecture delivered at the Manchester Royal Infirmary.

† See abstract in Tubercle of Dec. 1st, 1926.

the average case of pulmonary syphilis, however, there are widespread physical signs with little or no constitutional disturbance, and no pyrexia, anorexia, or loss of weight. The fitness of some patients in spite of marked lung signs is marvellous.

Distribution of Lesion.—A one-sided distribution in the chest, or hilar or basal rather than apical signs will sometimes suggest the diagnosis, and the radiogram may give the additional information that the spread of the fibrosis, or even of the gummata, is directly along the primary or secondary vessels and bronchi. It may also show marked thickening of the mediastinal shadows, and, as a rule, a heart-shadow differing in shape from that seen in tuberculosis. In chronic cases wrongly diagnosed as tuberculosis ringed shadows and evidences of calcification are absent. Evidence of syphilis in other organs than the lung is most suggestive. In one case, regarded as pure pulmonary tuberculosis, but in which fibrosis was very marked, the absence of the knee-jerk on one side led to the disclosure of a syphilitic history and a beneficial alteration in treatment.

Wassermann Reaction.—It is good practice to do a Wassermann test in all cases with repeatedly negative sputum tests, and in all atypical cases, as mixed tubercle and syphilis of the lung is not uncommon. Where pulmonary syphilis takes the form of a gummatous mediastinal tumour the positive Wassermann indicates a more hopeful diagnosis and antisyphilitic treatment. If pulmonary syphilis is suspected a Wassermann of the cerebro-spinal fluid should be done. If it is negative a provocative injection of novarsenobillon should be given before repeating the process. When X rays show the typical appearances of fibrosis or gumma the patient may give a negative Wassermann as a result of recent treatment. He may not disclose the fact until closely questioned, not knowing that it is important. There are occasional cases of undoubted syphilis in which both blood and spinal fluid Wassermanns are always negative.

FEATURES AIDING DIAGNOSIS.

The following is a general summary of features which have aided diagnosis in my series of cases.

1. Signs of phthisis, but repeated examinations of sputum for tubercle bacilli negative, and guinea-pig inoculations also negative.
2. Improvement in symptoms, especially asthma and dyspnœa, follows potassium iodide given empirically.
3. Signs marked, but history long and condition stationary. On the other hand, there may be no signs, except radiographically.
4. Other organs involved by ? syphilis.
5. Wassermann positive.
6. Recurrent but never fatal hæmoptysis.
7. Site of "TB" lesions unusual, and course abnormal.
8. Mixed TB and syphilis in lungs; TB may heal and sputum be negative, but symptoms—e.g., marked dyspnœa—remain.
9. Spontaneous fractures in patient and in another member of the family.
10. Blood pressure rather too high for tubercle or malignancy.
11. Symptoms typical of a mediastinal tumour, but Wassermann test, the effect of iodide, and the longer course differentiate mediastinal gumma from lymphosarcoma; X rays do not, as a rule, help in treatment.
12. Bronchiectasis, or tracheal or laryngeal stenosis.
13. "TB laryngitis" is never primary, so if this diagnosis is made, and there are no signs of lung disease, syphilis should be suspected unless an X ray shows typical tuberculosis. A syphilitic laryngeal ulcer should heal with potassium iodide, but local and general treatment and tonics may be necessary to complete cure (cf. vicious circle stasis in laryngeal diphtheria followed by ulceration from tube).
14. X rays show fibrosis of a peculiar distribution, with no calcification and no ring shadows, but much mediastinitis, with broadening of mediastinal shadow, and heart-shadow of a different shape. Radiographic peculiarities have, however, still to be worked out.
15. Chest signs, with little or no loss of weight, but marked peculiar anæmic appearance. Absence of the usual pyrexia of tuberculosis of similar severity.
16. Signs of serofibrinous pleurisy; the fluid recurs after repeated tappings, but the patient does not go downhill (cf. recurrent ascites, with stationary condition, due to syphilitic peritonitis or cirrhosis).
17. If histological autopsies were always done the typical appearances of syphilis would be found in many of the cases passed over, naked-eye, as tuberculosis.

TREATMENT.

The drug which gives the most rapid and unexpectedly good results in pulmonary syphilis is potassium iodide. Doses of 5 to 10 gr. thrice daily are often sufficient, but where gummata are present much larger doses are required. Where retention of secretion is giving rise to bronchiectatic cavities, as well as where free secretion is troublesome, Rolleston and C. Ogle[7] have drawn attention to the advantage of combining belladonna with the iodide. I have also found the addition useful when dyspnœa is a prominent symptom, very likely due to some extent to spasm.

The success of treatment in those cases in which there is any element, however slight, of tracheal or bronchial stenosis depends primarily on early diagnosis. There is a grave tendency to cicatricial contraction of scar tissue in these regions. Tracheoscopy and bronchoscopy are of much diagnostic value in doubtful cases.

Tonic treatment is often useful, and includes syrup of the iodide of iron in 1 drachm doses, and arsenic, either by mouth as Fowler's solution 1 to 5 minims, or intravenously as novarsenobillon, in selected cases in which the heart condition is reasonably good. The ferrum tartaratum combined with iodide of potash is also helpful.

Mercury requires more care in its use, but is not, as a rule, contra-indicated so long as the patient is kept under careful observation. On the whole inunction is best, but it may be given in the usual mixture with iodide. At the first sign of stomatitis it should be stopped. Under its use albumin may disappear from the urine in generalised visceral syphilis.

For the more well-to-do patient a course of warm sulphur baths at Aix-la-Chapelle or a voyage to the Canaries may be prescribed with benefit. Not only in those cases in which tubercle and syphilis are combined is benefit derived from fresh air, change of scene, and voyages. Even in the purely syphilitic cases the good results obtained from these measures with the rest which they imply is at times extraordinary.

It is very instructive sometimes when a case of dermatitis fails to heal up completely to see the great benefit derived when antispecific treatment is added to the local treatment already in progress. The same applies to cases of pulmonary tuberculosis which have a specific element. Indeed, temporary improvement may result, even in malignant conditions, from antispecific treatment in specific subjects. It is well known that syphilis is an ætiological factor in cancer of the lip, tongue, &c. I have also used with benefit thyroid gland and "Donovan's solution" in 10 or 15 minim doses. In mixed syphilis and tuberculosis the almost constant peribronchial fibrosis contra-indicates artificial pneumothorax. Complete recovery cannot, as a rule, be promised in syphilitic disease of the lung.

SELECTED CASES.

A synopsis of selected cases is here given:—

1. Male, aged 49. Starch worker. Two years' history of dyspepsia. Now has cough and nausea. Has lost 2 st. in last 18 weeks. No appetite; pale; anæmic. An indefinite resistance in upper part of abdomen. Liver enlarged, but also an indefinite lump palpable, apparently the lower pole of right kidney. Blood and albumin in urine. Signs of bronchitis at right base. Sent for an X ray examination as ? carcinoma stomach. X ray report: "Stomach normal; but lungs show general mottling, as tubercle but mainly basal, apices almost clear; suggest miliary tubercle." We then suggested tubercle of kidney as a possibility, and X ray report came back: "Kidneys normal to X rays; but calcified glands seen in front of sacrum." By this time we had received a strongly positive Wassermann report, also negative reports as to tubercle bacilli in sputum and urine. At no time was there any pyrexia. Novarsenobillon and mercury by inunction were now given, with rapid improvement. Chest signs were limited to rhonchi

over right lower lobe, consonating râles low down at the back on the right side, and slight friction over left border of sternum and precordium. First sign of improvement noted was that the urine cleared up as soon as antispecific treatment began (cf. Sir T. Myles).[8]

2. Female, aged 49, twice married. One child aged 21. Three months' cough. One month pleurisy. Returned from holidays just previously to admission; tired and weak. No previous chest trouble. Admitted as "asthma; getting worse." In coughing fractured third right rib near vertebral end; pleurisy, and later effusion, resulted; 56 oz. removed, clear, straw-coloured. Improving with rest and potassium iodide. No anæmia. Wassermann strongly positive. The indirect benefit a Wassermann may confer is well illustrated by Kirkwood, who relates a case in which as a result of his finding out that a woman had mixed tubercle and syphilis of the lung syphilitic treatment of a hitherto ununited fracture of the femur in her husband was completely successful, firm union resulting.

3. Female, unmarried, aged 56. Admitted as mediastinal tumour, with fluid at right base. This diagnosis was made because she was markedly distressed and cyanosed, with prominent superficial veins on the chest wall, together with mediastinal dullness in front and dullness over right lower lobe. A routine Wassermann was strongly positive, but before we could start any antispecific treatment the pulse-rate shot up, and as tapping the chest showed that the fluid now looked like liquid fæces, she was transferred for operation. She stood this well, and left the hospital much improved. Probably this was a case in which a breaking-down gumma of the liver burst through the diaphragm into the pleural cavity, and in the end the cavity became infected with *Bacillus coli*. Syphilitic treatment followed.

4. Male, aged 48, warehouseman. History of syphilis 15 years ago. Brother died of phthisis 30 years ago. Outstanding feature great dyspnœa, even when at rest. Cough with audible mucous secretion as he talks, yet he calls it a "dry cough." Two attacks of pleurisy, the second in January, 1925, and dyspnœa since. Three negative sputum specimens subsequent to positive ones. Lost flesh after first pleurisy attack, but regained it; losing again this year. A1 for insurance six years ago. Strongly positive Wassermann. Dull right apex and root. Tuberculous appearance. X ray shows broad mediastinal shadow, atypical distribution of involved area, mainly right-sided. Heart shadow unlike that of tuberculosis. Great improvement for a time under iodide, mercury, and later novarsenobillon, but later heart muscle slowly failed.

5. Male, aged 56, a baker. Admitted for great and urgent dyspnœa, with an outside diagnosis of asthma. History of osteomyelitis of right tibia, when aged 15, and of pneumonia a year ago; also of syphilis when aged 30, for which had three years' treatment at a lock hospital. Urine normal. Blood pressure 128/80. Wassermann strongly positive, 1 in 40. Signs of bronchitis and emphysema, with dullness and diminished breath sounds at right apex, and increase in vocal resonance. X ray of chest shows diaphragmatic adhesions on both sides, with hilar shadows stronger than usual. Did well under iodide at first and intensive treatment later on.

[Dr. Tylecote described several other cases, and showed radiograms illustrating various points. He then concluded by thanking Prof. Shaw Dunn, and Drs. W. B. Anderton, A. E. Barclay, W. J. S. Bythell, and J. L. Stewart for assistance in various directions in connexion with the paper.]

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SYDNEY HOSPITAL.—This hospital, one of the oldest institutions in Australia, is making an appeal for several thousands a year of additional income. It began its work as along ago as 1788, and from tents and wooden structures has developed into its present fine building, with thoroughly modern equipment. The annual expenditure amounts to more than £100,000, but the receipts unhappily fall considerably short of that sum.

PHIMOSIS AND DYSURIA IN INFANCY.

A CLINICAL INVESTIGATION.

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PART I.

AMMONIACAL DERMATITIS OF THE NAPKIN AREA AND ITS RELATIONSHIP TO DYSURIA.

THE question of phimosis and its relationship to circumcision is of considerable importance because of the frequency with which the operation is carried out, and it has appeared to us that this subject has received less consideration than it merits. The following paper is the result of a year's observation of all cases subjected to or recommended for circumcision in the surgical out-patient department of the Royal Hospital for Sick Children, Edinburgh, and constitutes an attempt to analyse this clinical material and review the whole subject. In a series of over 600 cases recommended for circumcision during the year under consideration, the chief complaint has been dysuria in about 53 per cent; 19 per cent. have been sent up because the doctor, nurse, or a neighbour thought that circumcision was necessary. In 12 per cent. an adherent prepuce or a true phimosis was discovered during the examination of a hernia or a hydrocele.

The high incidence of cases in which the symptom complained of was dysuria divides this investigation naturally into two main sections: (1) ammoniacal dermatitis of the napkin area and its relationship to dysuria; (2) the status of circumcision as a surgical procedure.

Our attention was directed to ammoniacal dermatitis of the napkin area and its relationship to dysuria by (1) its frequency (over half of our cases); (2) its persistent tendency to relapse in untreated cases; (3) the obvious incongruity of treating it by the removal of a perfectly lax prepuce which did not seem to be in any way responsible for the pain; (4) the resemblance between the symptoms of dysuria seen in the uncircumcised child and that observed in the meatal ulcer of the circumcised.

The only reference to this subject which we have been able to find in British literature is in John Thomson's[7] "Clinical Study and Treatment of Sick Children," which draws attention to Zahorsky's[8] work on the ammoniacal napkin and its relationship to the occurrence of meatal ulceration. This work attributes to a common cause dysuria, napkin dermatitis, and meatal ulcer, but the treatment recommended is purely empirical in character. The treatment of the various manifestations of ammoniacal irritation was put upon a rational basis in 1921, when Cooke, of St. Louis[5][6] published the results of an exhaustive clinical and experimental investigation, in which he demonstrated the efficacy of antiseptic impregnation of the napkin as a method of treatment. In a later paper Lanman[6] confirmed Cooke's findings.

Clinical Features.

Ammoniacal napkin irritation causing dysuria presents a definite clinical syndrome which may be described under four headings: (1) smell of ammonia; (2) irritation of the napkin area; (3) dysuria; (4) diet.

1. *Smell of Ammonia.*—There is a definite smell of ammonia from the napkins when they are removed if they have been allowed to remain in contact with the child for a short period of time in a wet condition. This is, of course, most marked on removing the morning napkin. Most mothers in this part of the country describe the ammoniacal napkin as "strong," or "irritating to the eyes," without recognising the ammoniacal origin of the odour, while many look upon it as a normal condition. Occasionally one encounters a mother complaining of the ammoniacal odour only, without having noticed

any irritability on the part of the child. It is also not uncommon for a mother to deny indignantly that the napkins smell at all, even though the odour may be easily recognised at several yards distance at the time of examination.

The urine collected directly into a vessel is entirely free from odour, and it should be noted that the odour is the pungent one of fresh ammonia, and is quite distinct from the foul smell of decomposing urine.

2. *Irritation of the Napkin Area.*—This may take the form of an erythematous or of an ulcerative lesion, and we have gradually come to recognise several distinct types: (*a*) simple erythema, (*b*) scaly erythema, (*c*) ulceration, (*d*) severe ulceration, (*e*) preputial dermatitis, (*f*) meatal ulcer.

(*a*) *Simple Erythema.*—A mild blush of the prepuce, scrotum, and inner sides of the thighs.

(*b*) *Scaly Erythema.*—Old-standing cases of the above type where the epidermis becomes thickened and glazed, then cracked and scaly in appearance, finally desquamating, often in large scales.

(*c*) *Ulceration.*—Ulcerative lesions with or without some accompanying erythema, affecting the scrotum and thighs. The "ulcers" commence as bluish-grey moist thickenings of the epidermis. The lesion is, in the absence of secondary infection, confined to the epidermis and therefore heals without scarring.

(*d*) *Severe Ulceration.*—Old-standing and very severe instances of the ulcerative type are not by any means common. In these the lesions have become confluent and bear at first sight a startling superficial resemblance to a widespread phagedæna. The epidermis is moist and thickened over the whole napkin area, and in places assumes a black colour as if undergoing gangrene. The lesion being practically confined to the epidermis, there are no marked toxic symptoms, though the infant may be very much worn out by constant pain and discomfort.

(*e*) *Preputial Dermatitis.*—Excoriation or ulceration affecting mainly the tip of the prepuce and often combined with some degree of irritation elsewhere. This type forms a definite entity by itself. The prepuce presents a somewhat bulbous extremity, which is thickened so as to be almost mushroom-shaped, and is fissured and excoriated. This condition is frequently designated "chronic balanitis," a term which is entirely incorrect and misleading. It is more accurate to refer to the condition as a preputial dermatitis, and this term is employed throughout the article.

The terms "balanitis" and "balano-posthitis" properly imply the presence of an inflammatory condition within the preputial sac. On inspection of the above type (*e*), of excoriated prepuce, however, it is very evident that all thickening and ulceration is not only confined to the free end of the prepuce, but affects an area at and just outside its orifice. On retracting the prepuce, moreover, no signs whatever of inflammation can be seen and the ring of smegma in the coronal sulcus is found to be uninfected. These observations have been confirmed by microscopical examination of prepuces after removal, in which no inflammatory reaction could be seen on the inner surface, the reaction being entirely confined to the outer aspect of the tip of the prepuce. It is not uncommon for the ring of œdema at the tip of the prepuce to prevent retraction, whereas, after the irritation has been cured by adequate treatment, the prepuce retracts with ease. True chronic balanitis is, in our experience, extremely rare in young children.

(*f*) *Meatal Ulcer.*—A lesion analogous to the above, but occurring in the circumcised child. In these cases one finds an ulcerative lesion at the glandular urinary meatus varying from a slight excoriation to an ulcer occupying half the surface of the glans penis. The history usually given is that a "water-blister" formed and then burst, leaving an ulcer which has evinced no tendency to heal. The majority of cases follow circumcision for the last-mentioned type of lesion (*e*). The meatal ulcer, like all ammoniacal lesions, is confined to the epidermis and heals without any scarring. Stricture of the meatus on healing only occurs as the result of infection of the chemically produced ulcer with pyogenic organisms. Despite the statements to the contrary often met with, this is, we think, extremely rare. The meatal ulcer exudes a little serous fluid which dries and forms a crust which may seal the meatus. In addition, the severe pain induced by micturition in these cases may lead to a reflex acute retention of urine, of which condition meatal ulcer is by far the commonest cause in children of this age. The meatal ulcer is the classical ammoniacal lesion in all cases in which the glans penis has been deprived of its normal preputial covering, and we have seen a typical meatal ulcer in a child who had never been circumcised, but who was the subject of a minor degree of glandular hypospadias with a congenitally short, hoodlike prepuce which did not efficiently cover or protect the glans.

3. *Dysuria.*—The child screams and draws up the legs just before and during the act of micturition.

4. *Diet.*—The condition is seen almost exclusively in bottle-fed infants or in children of the napkin-wearing age on a mixed diet. The condition very commonly appears immediately after weaning the child from the breast.

In all the types of napkin irritation due to ammonia one finds that the irritative lesions are most marked on the convex surfaces of the skin folds in the region—that is to say, the portions of skin which come most intimately into contact with the napkin, while the clefts between these folds are relatively unaffected. Adamson [1] has observed, moreover, that erythema is often encountered on the calves of the legs and the heels—that is, on those parts which come into contact with the outer surface of the napkin in the flexed position of the limbs commonly assumed by infants.

Sex.—While we are particularly concerned with the condition as it affects the male child, ammoniacal napkin irritation is also met with in females, but in them, owing to the protected situation of the urethra, it is seldom the cause of dysuria. The condition is said by some, however, to be an almost invariable precursor to the acute pyelitis of the female child.

Age.—The condition occurs most commonly in the first year of life, especially following weaning, whether this be done early or late. If the mother is questioned the onset of a smell of ammonia or of the signs of irritation can in many cases be dated quite definitely from the commencement of bottle-feeding, while the condition is rare in breast-fed children. The reasons for this are explained below. The following cases illustrate well the common history of a sudden onset of napkin irritation immediately after weaning, and the second one also the necessity in severe cases of conscientious attention to the details of the method of treatment advised below.

CASE 577.—C. M., aged 1 year, has been fed entirely at the breast and had been an exemplary infant, until one week before seeking advice. Since weaning the baby a week ago a strong smell of ammonia had been noted, especially from the morning napkins; the child has cried every time he passed urine, and ulcers have appeared on the scrotum and the tip of the prepuce. Boric treatment relieved the dysuria in one day and healed the ulcers in one week.

CASE 581.—C. G., aged 10 weeks, was sent in by a doctor with a request for circumcision on account of severe dysuria accompanied by ammoniacal ulceration of the thigh, scrotum, buttocks, and prepuce. The symptoms had been present since the child was weaned two months before. Boric treatment was advised and a month later the mother returned armed with another letter from the doctor again requesting circumcision as the boric treatment had failed to relieve the condition. On questioning the mother it was found that she was using very thin non-absorbent cloth napkins, and was treating five or six in one cupful of solution. She was told to get towelling napkins and was carefully coached in the proper boric routine. On reporting one week later the lesions were practically healed.

Ætiology and Pathology.

For a proper understanding of the ætiology of ammoniacal napkin dermatitis we are indebted to the observations of Zahorsky [6] and Brenneman,[2] and especially to the experimental researches of Cooke [3 4]

on the subject. It is largely owing to these researches that the condition has been placed upon a firm basis as a clinical entity and its causation clearly demonstrated. Cooke showed that the lesions were produced by ammonia and that the ammonia was liberated from the urea of the urine by the action of an intracellular urease present in a bacillus which inhabits the colon in a large percentage of normal children.

He obtained this organism (*B. ammoniagenes*) in pure culture and studied its peculiarities. It is a Gram-positive, non-motile, aerobic bacillus forming a short, straight rod with well-rounded ends, and measuring from 0·8–1·4 microns in length. Occasionally larger forms are met with, and in older cultures involution forms are common. On culture the colonies as a rule show a faint yellowish pigmentation. The organism is non-pathogenic and does not ferment the ordinary sugars or form spores.

The bacillus flourishes best in a medium which is on the alkaline side of neutrality, while an acid environment causes cessation of growth. Thus, in the highly acid contents of the large intestine of the normal child the organism will not flourish. If the acidity be diminished it will begin to flourish, and will multiply the more actively the nearer the reaction of the contents of the bowel tends towards alkalinity.

Inoculated into a solution of urea or into fresh sterile urine under conditions favourable for its growth, it produces ammonia in considerable quantity in a very short space of time. It is the ammonia produced in this way in the urine-soaked napkin which is responsible for the irritation of the underlying area of skin. This point was conclusively demonstrated by Cooke as follows: He applied a wet dressing of a pure culture of the *B. ammoniagenes* to his own forearm for 12 hours without the development of any lesion. A wet dressing of urea solution again caused no irritation, but a wet dressing of urea solution inoculated with *B. ammoniagenes* produced a strong smell of ammonia and a typical glazed erythema in the course of a few hours.

It is clear from what has been said that alterations in the chemical reaction of the contents of the large intestine are of importance. The normal acid reaction inhibits the growth of the *B. ammoniagenes* sufficiently to prevent a significant production of ammonia in the napkins. If the acidity diminishes, the organisms increase in number and the production of ammonia correspondingly increases. Debre, Goiffon, and Rochefrette [5] have shown that the stools of breast-fed babies are highly acid in reaction, while those of bottle-fed infants become slightly alkaline, approximating in reaction to the fæces of the adult. It is clear, therefore, that the *B. ammoniagenes* can flourish actively in the stools of bottle-fed children, and that, consequently, napkin irritation is more frequently met with among them, whilst it is rarely seen in the purely breast-fed infant.

This observation furnishes the explanation of the fact previously noted, that it is a common experience to elicit a history that ammonia production, dysuria, and dermatitis have first made their appearance within a day or two of weaning the child from the breast. (See Cases 577 and 581 described above.)

"*Ammoniacal Storms.*"

In bottle-fed children and in those past the age for bottle-feeding, it is obvious that the chemical reaction of the stools must vary considerably from time to time according to the diet and a host of other factors, and that therefore the activity of the bacillus will also vary from time to time. As a result, we find that children who suffer from ammonia production do so in recurrent attacks. They are, in fact, liable to what we are in the habit of referring to as "ammoniacal storms," which last for a varying period. Each storm is accompanied by erythema or excoriation of the napkin area, and when the child passes urine through the irritated ring of skin at the tip of the prepuce, pain is caused and the infant screams.

In the already circumcised child, if a storm occurs, the delicate epidermal surface of the tip of the glans penis bears the brunt of the irritation in the absence of its natural and more resistant protector the prepuce, resulting in the development of a meatal ulcer.

The liability of ammonia formation to take place in these storms explains why some children may develop meatal ulcers immediately after circumcision, while in others its appearance is long delayed. No circumcised child is immune from this complication so long as he continues to wear napkins even at night. The largest meatal ulcer which we have met with appeared during an intense ammoniacal storm nearly 18 months after circumcision, when the boy had long given up wearing napkins during the day, but was still wearing them during the night. The two following cases illustrate the intervals which may elapse between circumcision and the development of a meatal ulcer, their lack of response to empirical methods of treatment, and their ready response to the boric acid treatment.

CASE 535.—H. I., aged 8 months, was circumcised on account of dysuria at the age of 7 weeks. He was cured after the operation until two months before being seen, when a meatal ulcer appeared, with very severe dysuria, erythema, and a smell of ammonia. The ulcer has persisted unchanged in spite of the trial of the usual methods of treatment. Boric treatment was advised with the result that the ulcer healed within a week.

CASE 600.—H. H., aged 1 year 6 months, was circumcised shortly after birth as a routine measure. He has suffered from severe dysuria during the last fortnight. The boy wears napkins only at night now, but these are very ammoniacal when removed in the morning. There was a very large meatal ulcer covering half the glans and a mild erythema of the napkin area. Boric treatment of the night napkins relieved the dysuria in 48 hours and healed the ulcer in a week.

The more ammonia there is liberated in the napkins the more alkaline do the contents of the napkin become, and, consequently, the more rapidly does the offending bacillus proliferate. Once ammonia appears, therefore, a vicious circle is initiated, so that ammonia is produced in larger and larger amounts, and this explains Cooke's observation that the intensity of the irritation is influenced by the length of time during which the napkins are allowed to lie in contact with the child in a wet condition. It will be seen later that it is this vicious circle which we aim at breaking by means of the boric method of treatment.

Other subsidiary factors which may influence the condition are the following: (1) the care exercised in keeping the buttocks clean and powdered; (2) boiling the napkins, rather than merely washing or rinsing them; (3) the type of soap used for the child, the cheaper brands of soap being often strongly alkaline in reaction.

It is because of attention to these details that the severe types of irritation are rare amongst better-class children.

Differential Diagnosis.

The three main skin affections which must be mentioned are syphilis, the common intertrigo, and impetigo.

1. *Syphilis.*—It was formerly believed that many persistent napkin rashes were attributable to hereditary syphilis. That the frequency of this association has been exaggerated there can be little question, as most of the so-called syphilitic rashes in the napkin area present the features which we are accustomed to see in ammoniacal irritation, and respond readily to efficient treatment directed towards this condition. Certain cases will be found to be associated with other signs of hereditary syphilis and a positive Wassermann reaction. It is probable that the unhealthy syphilitic child is more than usually liable to show the severer manifestations of ammoniacal dermatitis. The true syphilide is, of course, occasionally encountered, but in it the lesions will be found to lie in the true skin and therefore to be deeper than the epidermal ammoniacal lesions.

2. *Intertrigo* presents quite a different picture from ammoniacal dermatitis, and if a true conception of the ætiology of the latter condition be kept in mind,

no difficulty can arise. The most essential point of difference lies in the fact that the ammoniacal lesion affects the convex surfaces of the skin folds in the napkin region and spares the clefts, while conversely, intertrigo essentially affects the clefts where skin surfaces are in contact and spares the convex surfaces, at any rate, in the milder cases. Intertrigo also presents a typical moist "weeping" surface of a brilliant scarlet colour, which is not seen in the ammoniacal erythema. The history of an ammoniacal odour in the napkins should be absent in intertrigo, but the mixture of serous discharge with the urine and fæcal matter in the napkin of an ill-kept child causes a foul odour which may be mistaken for ammonia. Lastly, intertrigo does not respond to treatment directed towards an ammoniacal lesion.

3. *Impetigo* may be grafted on the surface of an ammoniacal lesion. It shows a crusted appearance which is not seen in the uncomplicated napkin dermatitis, and similar lesions are usually present on the scalp or face.

Treatment.

Having regard to the ætiology of the condition, attempts to treat ammoniacal dermatitis must proceed along one of two lines: (1) dietetic, directed towards increasing the acidity of the contents of the large intestine; or (2) treatment of the napkins directed towards preventing the production of ammonia in them.

It is quite obvious that circumcision cannot influence the irritative process, and exposes the child to the possibility of developing the most distressing of all ammoniacal lesions, the meatal ulcer. In cases requiring circumcision, we either postpone operation till napkins are no longer being worn or else perform the operation after all symptoms of dermatitis have cleared up under appropriate treatment, first warning the mother that the treatment will need to be continued as long as the napkins are worn.

1. *Dietetic Treatment.*—Immunity from ammoniacal dermatitis adds another to the already overwhelming list of advantages of breast-feeding. In the presence of established ammoniacal dermatitis, attempts to alter the reaction of the contents of the large intestine by dietetic methods have been found disappointing by all workers on the subject. Accurate regulation of feeding to reduce imperfect digestion to a minimum is obviously a necessity in those cases complicated by slight degrees of enteritis. Increasing sugars in the diet at the expense of fats is said to render the stools more acid in reaction, but we have found this disappointing in practice, and, in view of the success attending the treatment of the napkins, we have not pursued this line of treatment further.

(2) *Treatment of the Napkins.*—The napkins form the only link at which the chain of events may be broken. When ammonia has actually been formed it is impossible to prevent its action on the skin by the application of the various ointments which have from time to time been suggested. Cooke showed that low concentrations of various antiseptics would prevent the production of ammonia in the test-tube, and, applying this observation to clinical practice, he conceived the idea of impregnating the napkins with antiseptics in order to prevent, or at all events, to delay, the bacterial action at work. The most efficient of these antiseptics is probably mercuric chloride, but undoubtedly the safest and simplest is boric acid, which we have made use of throughout. Cooke prefers the use of 1-4000 mercuric chloride prepared by dissolving a 7½ gr. tablet in two quarts of water. We feel, however, that to issue tablets of mercuric chloride to people of the hospital class, often living under very crowded conditions, is to run an unjustifiable risk of accidental poisoning. Boric impregnation of the napkin has proved extremely valuable in hospital work. The method is cheap, easy to apply, harmless, and very effective. After one experience of its effect in quietening that source of domestic discord, a screaming infant, the mothers themselves become the strongest advocates of the method. Admittedly one finds that certain of the more severe forms of the ulcerative type are a little slow in responding to the treatment on account of the presence of a superadded infection, but even these cases usually clear up in the course of a few weeks. Failure can usually be traced to the fact that the details of the method are being imperfectly carried out. (See Case 581 described above.)

Routine.

We are in the habit of giving to the mother the following printed instructions:—

Instructions for Boric Treatment of Napkins.

Obtain a packet of boric acid crystals. (Prescription given).

Treat all napkins* / Night napkins only } in the following manner.

(* The inapplicable words to be deleted.)

1. All napkins to be boiled thoroughly and then dried.
2. Add a dessertspoonful of boric crystals to a breakfast cupful of boiling water.
3. Soak the dried napkins in this solution, then wring out and hang up to dry. It is usually possible to treat two or three napkins in this way from one cupful.
4. Keep the napkin area of skin clean and dry, and change napkins frequently.

By this procedure the napkins are impregnated with boric acid crystals in a fashion similar to that used in the manufacture of boric lint. It is also of importance that suitable diaper materials should be used. Turkish towelling and Harrington are among the best, as they are fairly absorbent, withstand boiling well, and are of a non-irritating texture. Waterproof knickers should not be worn, as they keep the napkin region moist and also are apt to lead to undue economy in the use of napkins. In dealing with cases of severe dermatitis rigid attention to the details of the method of treatment may make all the difference between success and failure. (See Case 581.)

Treatment of Meatal Ulcers.—Before appreciating the true cause of this complication the treatment adopted was the passage of bougies to stretch the meatus and the application of a bland ointment to prevent the lips of the meatus from becoming gummed together by the exudate. The bougie method of treatment is definitely harmful, since by dilatation it exposes more of the urethral mucous membrane to the action of the ammonia, and, by lacerating the inflamed lips of the meatus it may cause cicatrisation and eventually stricture of the meatus. The boric method of treatment is uniformly successful in these cases, as demonstrated below. (See Cases 535 and 600.)

Results.

Recently we have treated with the boric method a consecutive series of 103 cases of dysuria in children of the napkin age presenting the signs and symptoms of ammoniacal irritation, and our results have been almost uniformly good.

The series has included instances of all types of ammoniacal lesions and may be classified as follows:—

1. Cases of dysuria of very short duration, not presenting any very obvious erythema, but in which an ammoniacal odour from the napkins has been noticed	17
2. Cases presenting a more or less diffuse mild erythema of the napkin area without excoriation or ulceration	23
3. Cases of preputial dermatitis	23
4. Cases presenting excoriations or ulcerative lesions most intense on the buttocks and scrotum	26
5. Cases of meatal ulceration	14

In all classes boric impregnation of the napkins has resulted in rapid cure almost without exception. In Classes 1 and 2 the cure is startlingly rapid, the dysuria being in all cases relieved in from 12 hours to two days. In the excoriated and ulcerated, Classes 3 and 4, a cure takes longer, as one might expect, but all lesions are usually healed in from one to three weeks. Lastly, the cases of meatal ulceration respond extremely well to the boric treatment, as even ulcers which have persisted for months in spite of other methods of treatment heal almost without exception in less than one week.

It is obvious that, if a child is liable to the development of "ammoniacal storms," the boric treatment must be continued after the lesions are cured, as long as the napkins are worn. It is not an uncommon experience to hear that a mother ceased to treat the napkins when the baby was apparently cured, but has hurriedly commenced again when a recurrence of the ammonia and dysuria made itself manifest. The following case illustrates the persistent tendency to relapse and the necessity for continuing boric treatment even in the absence of symptoms.

CASE 570.—J. S., aged 8 months, reported with dysuria and ammoniacal napkins of one month's duration. There was a well-marked preputial dermatitis and some excoriation of the scrotum and thighs. The prepuce was retractable, but constricted the glans considerably, therefore boric treatment was advised, to be followed by circumcision after the irritation was cured. The irritation and dysuria were gone when the child reported in ten days' time, but circumcision was delayed on account of a small perianal abscess which was incised. After the abscess had healed circumcision was arranged for. Before this was carried out the mother reported because severe recurrence of dysuria and dermatitis had taken place. On questioning her she stated that, as all symptoms had gone, she had ceased to treat the napkins, with the result that an immediate relapse took place. Boric treatment again healed the ulcers in about a week, and circumcision was then carried out, the mother promising to continue the treatment as long as napkins were worn.

The average mother will state quite definitely that the treatment does not add noticeably to her domestic duties.

It is worthy of note that, although we have consistently circumcised all children referred to us in whom a true phimosis (as we shall define the term in the next portion of our article) existed, yet the number of circumcisions performed in hospital has been decreased by well over 50 per cent. since the relationship of dysuria to ammoniacal irritation has been recognised and efficiently treated by the boric method.

Summary.

1. The symptom of dysuria is more often produced by chemical irritation than by any preputial narrowing.
2. The chemical irritant at work is ammonia, which is formed in the napkins by the action of a specific organism from the colon. This organism flourishes in an alkaline medium and is capable of splitting up urea with the liberation of ammonia.
3. The signs of ammoniacal irritation are confined to the napkin area and present definite clinical features, some of which are often misinterpreted.
4. The occurrence of meatal ulceration following circumcision is due to the continued action of the ammoniacal irritation after removal of the covering prepuce.
5. A satisfactory method of treatment by impregnation of the napkins with boric acid is described.

PART II.

THE STATUS OF CIRCUMCISION AS A SURGICAL PROCEDURE.

Circumcision lays claim to being the oldest surgical operation. It is first mentioned in the Book of Genesis, when Abraham is circumcised at 99 years of age, as a sign of his covenant with God. Among the Jews it has persisted throughout the ages as a religious rite. The date of its introduction as a surgical procedure is uncertain. It has become, if not the most common, certainly one of the most common surgical operations carried out to-day, and in our opinion one which is carried out far too frequently. We have been asked at one time or another to circumcise children who had no phimosis for such various conditions as prolapse of the rectum, skin diseases, enuresis, hypospadias, tuberculous disease of the kidney, and digestive disorders. In these cases the prepuce was blamed either for producing the symptoms or for being an aggravating factor. It has seemed desirable to make an attempt to define what criteria justify the performance of the operation. Circumcision from the religious standpoint is not considered in this paper.

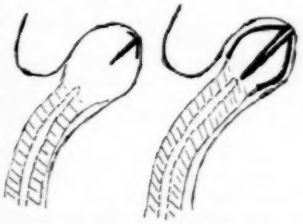
Since a correct conception of the development of the prepuce and glans is necessary to a complete understanding of the origin of phimosis a brief embryological summary becomes necessary.

Development.

Incorrect accounts of the development of the glans and prepuce are found in many text-books. A common error is that the tip of the genital tubercle is said to represent the glans penis alone, while the prepuce is described as a hood of skin growing forward to cover a previously exposed glans.

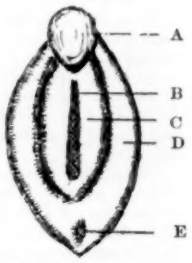
Credit is due to Berry Hart [11] and Wood Jones [10] for giving a full and correct account of the development of this part. With regard to this Wood Jones says: "Some degree of adhesion between the glans and prepuce is normal, and in regarding such adhesions as being the products of inflammation—or as anything other then entirely natural processes of development—an incorrect idea is gained of the condition, and an interesting page of embryology is overlooked." By studying embryos at various stages of development Berry Hart and Wood Jones were able to show independently that the genital tubercle (Fig. 1) is a skin-covered projection from the interior of which the future glans is sculptured out by the invasion of a mass of epithelial cells. The cloacal stage is common to both sexes (Fig. 2) and only later does the sexual differentiation of the external genital organs become apparent. While in the female the inner and outer genital folds become transformed into the labia minora and majora respectively, and the genital tubercle becomes the clitoris, in the male the outer genital folds from the scrotum, and the inner genital folds fuse together over the urethral groove to form the penile urethra, the line of fusion being marked by a raphé on the under surface of penis. Most of the penis is formed by the genital tubercle, the tip of which gives rise to the glans and the prepuce, still undifferentiated from one another at this stage. The urethral groove does not invade the tip of the genital tubercle—i.e., the future glans. That portion of the urethra which traverses the glans is formed in a different fashion. A solid rod of epithelial cells burrows into the glans itself, and becomes canalised by the breaking down of the central cells of the rod. This occurs about the seventh month. At a later date an epithelial cell mass grows into the tip of the genital tubercle and sculptures out the glans from the overlying skin.

FIG. 1.



The genital tubercle showing stages in formation of the glans and the tunnelling of the glans by the urethra.

FIG. 2.



Cloacal stage. A, Genital tubercle. B, Urethral groove. C and D, Inner and outer genital folds. E, Anal orifice.

The prepuce is eventually separated from the glans by a breaking-down of cells, but this has scarcely begun by the time the urethra has perforated the glans. The future preputial space is filled with epidermal cells which become flatter and flatter and reach a stage comparable with the superficial cells which are shed from the skin surface. The prepuce and glans may not become separated until some weeks after birth. Should this breaking-down be incomplete or delayed it is not difficult to account for the presence of adhesions between the prepuce and glans, nor to see that an adherent prepuce is usually due to delay or arrest in development. True phimosis is most probably due to an error in development.

Ætiology of Phimosis.

Phimosis is defined as a stenosis of the preputial orifice; or, as Bland-Sutton [9] puts it, "the glans is muzzled by its prepuce." The condition may be congenital or acquired, and opinion varies as to which is the more common in childhood. By acquired

phimosis is meant the chronic inflammatory changes which are said to result from the irritation of the preputial sac by stagnating urine, smegma, and so forth. When we commenced this investigation we were inclined to consider the acquired form as being the more common. Since becoming aware of the frequency and importance of ammoniacal irritation and of the rarity of true chronic balanitis, we now believe that the acquired form of phimosis is very rare. After careful examination we have not seen a single case which we could definitely classify as an acquired phimosis, except those which come under two classes, occasionally met with. These are: (1) the case in which stretching has led to splitting of the preputial orifice in several places; the scar tissue resulting from this laceration causes a phimosis, for which circumcision has to be carried out; (2) the case of temporary acquired phimosis, due to œdema—resulting from ammoniacal irritation affecting the tip of the prepuce. Only when the œdema has subsided under treatment will retraction be found possible.

The adhesions which are found between the prepuce and the glans are filmy and soft, although on occasion they may be fairly firm, and they separate cleanly (like lines of cleavage in fascial or intermuscular planes) leaving a smooth, intact, and glistening glans beneath. Were these adhesions inflammatory in origin their separation would occur in an irregular manner, leaving an uneven and lacerated glandular surface. Except in acute balanitis we have never seen any inflammatory reaction round the ring of smegma. Reviewing the above observations in the light of the development of the part, the congenital nature of the majority of these conditions is at once obvious.

Acquired phimosis is met with most commonly in elderly adults, where no retraction of the prepuce and cleansing of the glans has been carried out. Cracks and fissures develop at the margin of the preputial orifice and later become infected and give rise to scar tissue and so phimosis. Preputial stones are apt to form in such circumstances, and these are the cases in which penile cancer is most commonly seen.

Types of Phimosis in Infancy.

In the infant there are three types of prepuce which will not retract: (*a*) true phimosis, (*b*) adherent prepuce (both congenital), and (*c*) temporary acquired phimosis.

(*a*) *True phimosis* is said to be present when, owing to narrowness of the actual orifice of the prepuce, retraction of the prepuce to the coronal sulcus is either impossible or, where possible, causes paraphimosis from constriction of the glans. True phimosis is much less common than it is generally supposed to be. In these cases the correct and, in fact, the only treatment is circumcision, or one of the plastic modifications of this operation.

(*b*) *Adherent prepuce* may be said to exist when it is the presence of adhesions between the glans and the prepuce which prevents retraction. Separation of these adhesions usually permits of fairly easy retraction of the prepuce. This is a very common condition, and one in which circumcision is not needed, as separation of adhesions and retraction relieves the condition.

We examined a consecutive series of over 50 male infants at the Simpson Memorial Maternity Hospital within ten days of birth; in not one of these could the prepuce be retracted without first separating adhesions or stretching. Not more than two of these 50 cases could be called cases of true phimosis.

The differential diagnosis between true phimosis and adherent prepuce, as defined above, is not always so simple as might appear. A definite degree of true phimosis offers no difficulty, for a gentle attempt at retraction of the prepuce usually displays well the typical "miniature proboscis" like end of the prepuce and also demonstrates the unlikelihood of any simple dilatation of the orifice being effective. It is in the lesser degrees of true phimosis where differentiation is not possible by mere inspection. Here all adhesions must first be thoroughly broken down with the aid of a probe, after which the result of an attempt at retraction will make the diagnosis obvious—e.g., an adherent prepuce will now retract fairly easily, and if left retracted for a moment or two does not cause constriction of the glans.

True phimosis and adherent prepuce are symptomless conditions. A true phimosis with sufficient stenosis to cause mechanical obstruction to micturition is, in our experience, a very rare condition.

(*c*) *Temporary acquired phimosis* has already been mentioned and requires no further discussion.

Clinical Features.

In a series of over 600 cases sent up for circumcision, the usual reasons for seeking surgical relief were grouped thus: (1) dysuria, 53 per cent.; (2) symptomless cases in which circumcision has been advised, often for no very obvious reason, by a doctor or nurse, 31 per cent.; (3) paraphimosis, 1·5 per cent.; (4) acute balanitis, 6·5 per cent.; (5) preputial dermatitis, 8 per cent. Uncommon reasons were ballooning of prepuce, hypospadias, and sebaceous cyst.

The indications for circumcision afforded by the above clinical features deserve consideration.

The cases of *dysuria* in Group 1 are almost invariably the result of ammoniacal irritation, as also are those of preputial dermatitis in Group 5 (see Part I.). In the presence of ammoniacal irritation, circumcision is contra-indicated. These two groups contain many cases of adherent prepuce and several cases of true phimosis. The former are treated by separation of the adhesions, retraction and lubrication of the glans with vaseline, while in the latter circumcision is postponed if possible until the child no longer requires napkins. If the circumcision cannot be postponed, it is carried out under the boric régime, and not until the signs of ammoniacal irritation have been cleared up by this treatment.

Symptomless Cases.

The cases in Group 2 were constituted exclusively of true phimosis and adherent prepuce. They were entirely symptomless, and had either been noticed by the family physician or nurse, or by us in the course of the routine examination of cases sent up on account of a hernia or hydrocele.

The cases of *paraphimosis* in Group 3 form only 1·5 per cent. of the total cases. They occur most frequently in children after the third year of life. Reduction can be effected easily in the great majority of cases after steady compression of the glans in a swab for a minute or two. In difficult cases two other methods are helpful; firstly, that advocated by C. W. Cathcart, in which the œdematous and congested glans is wrapped in a broad elastic band and left for 15–20 minutes; or, secondly, multiple punctures of the glandular mucous membrane by the point of a fine needle to relieve congestion and œdema. Thereafter compression of the glans and œdematous collar of mucosa should render reduction of the paraphimosis possible. In our opinion one attack of paraphimosis forms an indication for circumcision as soon as all œdema has settled down and the parts have resumed their normal appearance. If this is not done the condition may be expected to recur sooner or later.

Group 4 comprises the cases of *acute balanitis*, which in our experience is not associated with phimosis. On the contrary, it is most commonly met with in children of 2 years of age or older with a rather long and easily retractable prepuce. The infection is most probably carried to the preputial sac by dirty fingers, and that would explain its high incidence in the easily retractable type of prepuce and its absence in infancy. A true gonococcal infection may occur, but it is not by any means common. If recurrent attacks occur, there can be no objection to the treatment of this condition by circumcision during a quiescent interval, as it is difficult or impossible to improve the personal hygiene of the class of child in which it is met with. As the con-

dition has no relationship to the ammoniacal napkin, circumcision may be carried out without fear of the unpleasant complications, such as meatal ulcer, which may follow the operation in younger children. It is our custom to treat the acute condition by four-hourly fomentations. Irrigation of the preputial sac with weak boric acid solution can be employed should it be deemed necessary. We have not found a dorsal incision of the prepuce necessary in the acute stage.

The rare cases in which *ballooning of the prepuce* is present, and of sebaceous cysts of the prepuce, should be treated by circumcision. Hypospadias of the less severe glandular type, with a hood-shaped prepuce which overhangs the glans, should on no account be treated by circumcision, as the prepuce is a valuable asset to a plastic operation should this be found necessary.

Circumcision: Indications and Contra-indications.

Indications.—The chief indications for circumcision, based on the foregoing considerations, are: (1) true phimosis, (2) paraphimosis, (3) acute recurrent balanitis. As in other operations, the performance of circumcision can be justified only by the prospect of definite benefit to the patient. We believe it is contra-indicated except for the above-mentioned conditions. Certain specific conditions in which it should not be practised may, however, be mentioned.

Contra-indications.—The special contra-indications are as follows: (1) ammoniacal irritation (irritative dysuria, or dermatitis); (2) adherent prepuce (uncomplicated by phimosis); (3) enuresis; (4) the presence of certain local anomalies: (*a*) webbed penis, (*b*) small penis, with large suprapubic pad of fat, (*c*) hypospadias with hooded prepuce.

The relationship of circumcision to (1) ammoniacal irritation, and (2) adherent prepuce have already been considered.

Enuresis.—We do not know of any circumstances under which enuresis may be benefited by circumcision. Indeed, the general consensus of opinion is that the operation tends to make the condition, especially in cases of psychical enuresis, definitely worse.

Local Anomalies, in the Presence of Phimosis.—(*a*) Various degrees of *webbed penis* are met with. Circumcision gives a very bad æsthetic result; therefore, stretching and retraction should be given a good trial first.

(*b*) *Small penis with large suprapubic pad of fat.* This has also been called the "fat boy" type of penis. When circumcision is carried out here the penis is liable to disappear from view in the suprapubic pad of fat, to the great alarm of the parents. Here, again, the æsthetic result of circumcision leaves much to be desired, so that it is advisable to persevere with stretching and retraction, at least until the parts by growth have become more normal.

Preventive Treatment.

Every male child should have its foreskin separated or stretched and retracted in the first fortnight of life. We consider that it should be made part of a maternity nurse's duty, before paying her last visit to the mother and child, to free all adhesions by gently sweeping a probe round between prepuce and glans. Then she should retract the prepuce, clear out smegma, and apply vaseline to the glans. She should be well instructed in the proper method of doing this during her hospital training. The nurse should instruct the mother to retract, cleanse, and lubricate the prepuce and emphasise the importance of doing this each time the child is bathed. If the prepuce is difficult of retraction the medical man in attendance should be consulted as to the advisability of circumcision.

This routine, we feel, would not only tend to prevent the circumcising of cases in which the operation is not really necessary, but would also bring all cases of true phimosis under medical supervision at an early date. It would also be the means of educating the public in what is to them largely an unknown hygienic precaution—the proper care of the preputial sac.

Method of Separation of Adhesions, Retraction, and Stretching of Prepuce.

Separation of adhesions is first carried out on the dorsum of the glans by introducing a sterilised probe under the prepuce. (Some practitioners use the rounded end of a sterilised hairpin.) By means of the probe separation is first carried back to the corona, and then round each side to the frenum on the under-surface. Thereafter the foreskin is retracted until the coronal sulcus with its ring of smegma is completely exposed. The smegma is removed with a moist swab or piece of cotton-wool, the glans is lubricated with vaseline, and the prepuce drawn forward again. It is our experience that some cases, said to have been recently stretched by the doctor or nurse, have only been incompletely separated, as adhesions still persist at the corona and the ring of smegma is still intact.

Where adhesions are slight attempts at retraction of the prepuce may separate all adhesions and thus permit full retraction. When carrying out retraction one should always avoid stretching the region of the frenum too much, as this delicate structure may be easily torn and a brisk hæmorrhage result. The glans, by virtue of its shape, is a very suitable dilator for the prepuce.

Where the orifice of the prepuce is narrow it may require stretching before separation of adhesions or retraction is attempted. This is most easily done by inserting the closed blades of a pair of sinus or fine-pointed artery forceps within the orifice, opening the blades slightly and withdrawing them open. This is done in two or more diameters. The manœuvre should be carried out aseptically and gently, for if splitting occurs stenosis may result later from scar tissue formation.

Methods of Circumcision.

These are too numerous to describe or even enumerate. Each operator has his own particular method and finds it satisfactory. There are, however, one or two points in technique that should be noted.

To gauge the correct amount of foreskin which requires amputation may be difficult at first. The beginner usually removes too little, the possibility of damage to the glans being always in his mind. In estimating the amount to remove the position of the coronal sulcus should be defined by palpation. Immediately in front of this a pair of forceps—e.g., Kocher's pressure forceps—is applied across the prepuce. The forceps is applied obliquely downwards and forwards to avoid damage to the frenum. As the forceps is gradually tightened the prepuce is drawn forwards until the forceps has cleared the glans. Then with a knife the prepuce is divided immediately proximal to the forceps. Damage to the glans is avoided by maintaining traction on the forceps while the section is being made.

After removal of this major portion of the prepuce the remaining cuff of its internal layer is slit up in the middle line with scissors almost to the corona. The two flaps thus formed are turned back. No further paring of the internal layer should be done as the final result is better when 5 to 10 mm. of it is left. Paring the inner layer close to the corona is to be depreciated. The stitches used should be interrupted and tied rather loosely, as tight or continuous stitches may cause undue constriction, necrosis, and œdema. As the mattress stitch often advocated at the frenum is apt to give rise to an area of necrosis we prefer to use a simple stitch on each side of the frenum. It is true that stitching is not essential. A strip of gauze can be wrapped round the corona, coapting the internal and external layers of the foreskin. This is surrounded and fixed by a narrow strip of tape. If the two ends of this latter are twisted together gentle pressure is maintained along the line of suture. This method we first saw employed by a Rabbi, who used neither artery forceps, ligatures, nor stitches.

Routine Circumcision: Arguments for and against.

The medical profession is rather sharply divided on this subject. There are the extremists who advocate circumcision for one and all, irrespective of the absence or presence of any local pathology. Others only resort to circumcision in the cases that really require it on pathological grounds.

The principal arguments that the extremists put forward in favour of routine circumcision are three in number: (1) in the interests of hygiene; (2) to reduce

the risk of contracting venereal disease; (3) to reduce the risk of epithelioma of the penis.

(1) The operation of circumcision has been urged in the interest of hygiene and cleanliness. We feel that to advise any otherwise unnecessary operation, however small, merely as a labour-saving expedient is contrary to the ethics and principles of the healing art. The remedy lies for the main part in the education of the mothers through the medium of the maternity nurse.

(2) There is a widespread belief that venereal disease, especially gonorrhœa, is less frequent among the circumcised than among the uncircumcised. It is therefore thought that its incidence among Jews is considerably less than among the rest of the population. It is the impression of practitioners who work among Jews that the incidence of venereal disease does not differ materially in that race from its incidence among the uncircumcised. With regard to this, Dr. Fishberg,[12] of New York, states: "It appears that even circumcision, which was considered one of the reasons for the immunity of Jews to venereal diseases, is not of material avail when they expose themselves to the dangers of infection."

(3) It is probably a fact that epithelioma of the penis affects exclusively men who have suffered from a life-long phimosis. We fail, however, to see why this should be used as an argument in favour of the circumcision of children who are not the subjects of phimosis.

The chief arguments against routine circumcision are: (1) anæsthetic risks; (2) certain possible complications—e.g., cellulitis, meatal ulcer, strangulation of glans by a hair.

(1) An anæsthetic is often dispensed with when circumcision is carried out in the first month of life. Circumcision later in childhood requires the administration of a general anæsthetic. Anæsthetists who have much experience of children's work admit that they are specially watchful during the administration of an anæsthetic for a circumcision. As might be expected in an operation conducted on the genital organs, a considerable reflex fall of blood pressure occurs on clamping or cutting across the prepuce. We have the impression that anæsthetic "scares" are more frequent during the course of a given number of circumcisions than during a similar number of such operations as that for the radical cure of inguinal hernia. It is probable that the anæsthetic mortality is higher also.

In a certain proportion of cases respiratory complications (broncho-pneumonia, bronchitis, &c.) inevitably occur whenever a general anæsthetic is administered, no matter for what operation. In spite of a preliminary routine examination of the chest the percentage of respiratory complications in out-patients, as the majority of these circumcision cases are, must be appreciably higher than in in-patients.

(2) Certain complications are liable to follow circumcision and must therefore be kept in mind. *Meatal ulcer* follows in a certain proportion of circumcisions carried out in the presence of ammoniacal irritation. Serious *sepsis* is admittedly rare but we know of cases of cellulitis following circumcision which have proved fatal. *Persistent hæmorrhage* may be the first sign of hæmophilia or purpura. A rarer complication is *strangulation of the glans penis by a hair.* This we mention because its occurrence is known to comparatively few. We have seen three cases during the last year. A long hair, probably derived from the child's mother, becomes wound round the coronal sulcus of a circumcised child and gradually cuts into the penis, causing œdema of the glans and an appearance at a first glance similar to a paraphimosis. It will be readily appreciated that the condition is not likely to occur in the uncircumcised child. The presence of œdema of the glans in a circumcised child should lead one to suspect the condition. On opening up the coronal sulcus a little sticky secretion will be found occupying a deep cleft at the bottom of which the offending hair will be found. We have seen an unrecognised case where the hair had completely divided the urethra, producing a very troublesome fistula, and had indeed nearly amputated the glans.

Conclusions.

(1) Adherent prepuce is extremely common, and may be considered normal in the first week or two of life.

(2) True phimosis is not so common as is generally supposed.

(3) Circumcision is carried out too frequently. In many cases separation of adhesions is all that is required.

(4) The chief indications for circumcision are true phimosis, paraphimosis, and acute recurrent balanitis.

(5) The routine circumcision in every case advocated by some is to be deprecated and is not without risks.

We wish to express our gratitude to Miss G. Herzfeld and Mr. Norman Dott, surgeons to the Royal Hospital for Sick Children, for the interest they have shown in these investigations, and to the latter for suggesting the need of the inquiry into the subject. We have to thank Miss Innes, sister in the surgical out-patient department, for much willing help and coöperation. The microscopical investigation of prepuces was carried out in the Experimental Surgery Department of Edinburgh University.

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THE CARRIER OF VIRULENT DIPHTHERIA BACILLI.

SOME RESULTS OF TREATMENT BY TONSILLECTOMY.

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UNTIL the active immunisation of non-immunes is adopted in England upon an adequate scale, the persistent carrier of virulent diphtheria bacilli must remain a source of danger to the susceptible child population amongst whom he lives. Hence it is still important to consider the available methods of treating the carrier state.

For the detection of the diphtheria carrier the routine morphological diagnosis of a culture from the swab is quite insufficient. The morphological diphtheria bacilli detected must be put to the proof of a virulence test.

Every year many hundreds of people—adults and children—who are so unfortunate as to harbour harmless diphtheroids, are hurried into infectious diseases hospitals upon the strength of a morphological diagnosis of a culture from the swab, to the needless anxiety of relations and at considerable cost to the community.

For example, in a recent consecutive series of 198 cases admitted to Little Bromwich Hospital, the practitioner before notifying the case had swabbed the throat or nose and received a positive report. 102 of the total showed evidence of clinical diphtheria. The remaining 96 showed no evidence. These latter were reswabbed by the medical officers immediately after admission, and the swabs sent for a report as to the virulence of the organisms present. In 61 of the 96 cases a report was received that the organisms present gave a negative guinea-pig Schick test; in 24 no organisms were found; in 11 only were organisms present which gave a positive guinea-pig Schick test (throat and nose, 2; throat, 5; nose, 4).

The original swabs taken by the practitioner, with possibly one or two exceptions, and all the swabs taken after admission by the medical officers in these cases, were examined in the Birmingham City Bacteriological Laboratory. Dr. H. Henry, the director, also carried out for us all the virulence tests detailed below, employing the guinea-pig Schick test.

The Chronic Carrier.

The chronic carrier of virulent organisms falls into one of two classes. He has either been the subject of a known attack of clinical diphtheria, in which case he is likely to have come under treatment and to be thereafter for a time more or less suspect; or he has never had any recognisable attack, but is discovered, as the result of swabbing contacts, to be harbouring diphtheria bacilli which can be shown to be virulent. He was probably the source of infection.

The chronic carrier of virulent organisms in the throat, whether "convalescent" or "healthy," is always immune—his Schick test is always negative.

In the majority of cases convalescent from diphtheria bacteriological clearance may be stated to be obtained as a general rule by or before the time that the patient is physically fit for discharge.

Hartley and Martin [3] showed that in a group of military cases the rate of clearance might be expressed by a logarithmic curve. Thomson, Mann, and McCartney,[4] in a preliminary study, decided that a patient should be classed as a carrier when the bacilli had persisted for 12 weeks. They state that of a total of 928 cases investigated, diphtheria bacilli persisted in 81 cases after 12 weeks had elapsed, whereas they ceased to be found by that time in 847. The investigation showed the much greater tendency for the bacilli to persist when they infect the throat and nose or the nose only.

TABLE I.—SWAB RECORDS OF FOUR CASES.

CASE 1.—I. P., 12 years. Faucial diph., 8000 units. A. D. S. Tonsils very large.

No. of swabbings (throat and nose)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Operation.	21	22
Result T	–	+	+	+	+	–	–	+	–	–	–	–	+	+	–	+	+	+	–	+		–	–
Result N	–	–	–	+	–	+	–	+	–	+	+	+	+	–	–	–	–	–	–	–		–	–
Virulence test					T+							N+											
Day of disease	20	35	48	56	65	76	86	95	103	111	117	125	132	140	147	153	159	166	172	177	192	200	205

CASE 2.—D. H., 8½ years. Faucial diph., 16,000 units. A. D. S. Tonsils "enormous."

No. of swabbings (throat and nose)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Operation.	21	22
Result T	+	–	–	+	–	–*	–	–	+	+	+	–	+	+	+	+	–	+	–	+		–	–
Result N	+	–	+	–	–	–	+	+	–	+	+	–	–	–	–	–	–	–	–	–		–	–
Virulence test										N+ T+				T+									
Day of disease	24	30	37	43	50	57	66	80	88	95	102	112	119	127	132	137	142	147	155	159	168	175	180

* Detained for sore nose.

CASE 3.—G. B. C., 8 years. Faucial diph., 8000 units. A. D. S. Tonsils large.

No. of swabbings (throat and nose)	1	2	3	4	5	6	7	8	9	10	11	12	Operation.	13	14
Result T.	+	+	+	+	+	+	+	+	+	+	+	+		–	–
Result N.	–	–	–	–	–	–	–	–	–	–	–	–		–	–
Virulence test					T+ N–										
Day of disease	32	38	42	46	53	59	63	68	74	81	88	94	109	116	120

CASE 4.—R. A., 9 years. Faucial diph., 8000 units. A. D. S. Tonsils large.

No. of swabbings (throat and nose)	1	2	3	4	5	6	7	8	9	10	11	12	Operation.	13	14
Result T	–	+	+	+	+	+	+	+	+	+	+	+		–	–
Result N	–	+	–	–	–	–	–	–	–	–	–	–		–	–
Virulence test				T+											
Day of disease	32	40	45	48	55	61	67	71	75	83	90	95	110	118	122

The purely nasal chronic carrier of diphtheria bacilli is not always immune. A purely nasal infection tends to produce immunity very slowly; but at any time before this has come about the nasal carrier may become the subject of true clinical nasal diphtheria, and, as a result of his clinical attack, will become an immune "convalescent" carrier. With a few nasal exceptions, however, it is true to say that the chronic carrier of diphtheria bacilli is always himself immune to the disease, either as a result of a frank clinical attack or as a result of immunisation by small repeated infections.

Theoretically from the case of true clinical diphtheria virulent organisms should be recoverable from the infected site in every case.

In a careful study of a long series of cases certified as suffering from diphtheria, and admitted to the South-Western Hospital, Caiger and O'Brien [1] found that "the laboratory worker's diagnosis (i.e., the recovery of virulent diphtheria bacilli) agreed with the clinical diagnosis of the hospital's medical officers in 97·5 of instances." Eagleton and Baxter [2] found that cultures from a case of diphtheria were virulent in 100 per cent. of those examined: from convalescents in 90·9 per cent.; from carriers in only 38·8 per cent. They found "no evidence that virulent cultures if isolated in a pure condition became avirulent."

For the purposes of this paper a carrier may be defined as a patient whose discharge from hospital is being delayed not upon grounds of physical unfitness, but by reason of the fact that he continues to harbour at one site or another *virulent* diphtheria bacilli. We agree that such cases form a small percentage only of the total admissions for genuine clinical diphtheria. The series of 90 cases which we analyse below occurred in an aggregate of 1538 admissions of cases of genuine clinical diphtheria; 81 were convalescent carriers and 9 were cases which on admission showed no clinical evidence of the disease, but which were Schick negative carriers of organisms of proved virulence. None of these nine is known to us to have had a previous clinical attack of diphtheria, but at least two of them are known to have been in close contact with cases which developed severe toxic types of the disease. All these 90 cases had either enlarged or unhealthy tonsils or adenoids, or both.

Futility of Local Antiseptics.

For a long time we restricted our efforts at clearance of the chronic carrier to local application of antiseptic sprays, &c., bacteriological aniline dyes, and diphtheria

vaccines. In a previous paper [5] one of us stated that in his experience the chronic carrier of diphtheria bacilli was almost always the subject of some nasopharyngeal abnormality; that the extensive trials of various methods of clearance carried out by Dr. Olga Payne showed that none of these were reliable; that surgical measures offered much better hopes of success, but that in the opinion of the writer, an opinion which as the result of further experience he no longer holds, such operations were preferably not done in fever hospitals.

TABLE II.—*Bacteriological Reports Immediately Prior to Operation.*

Age-group.	Virulent diphtheria bacilli in—			Total.
	Throat and nose.	Throat.	Nose.	
0–5	11	4	8	23
5–10	19	12	14	45
10–15	7	9	—	16
15–20	1	1	—	2
Over 20	1	3	—	4
Total	39	29	22	90

To show the futility of local antiseptic treatment, or the policy of waiting for the organisms to disappear from unhealthy nasopharyngeal tissues, we have set out the swab records of four of the first batch of cases upon which it was decided to operate. (These are not included in the later and longer series.) Before operation was resorted to in each of these four cases they had been treated with various local applications, the principal effect of which was to irritate the mucosa (Table I.).

TABLE III.—*First Bacteriological Reports after Operation.*

Age-group.	Throat and nose.		Throat positive.	Nose positive.	Total.
	Negative.	Positive.			
0–5	17	3	1	2	23
5–10	39	—	—	6	45
10–15	15	—	—	1	16
15–20	1	—	—	1	2
Over 20	4	—	—	—	4
Total	76	3	1	10	90

Results of Operative Procedures.

As the results of the first batch of cases which were operated upon in 1925 were so good, it was decided in 1926 to extend operative procedures considerably. The 90 cases detailed below show the results of this extended surgical work. As already mentioned, all were carriers of organisms of proved virulence; 81 were convalescent after a definite clinical attack of diphtheria, and 9 were Schick-negative carriers. Table II. shows the age-groups of the patients and the sites from which virulent organisms were recovered immediately prior to operation.

It will be noted that no purely nasal carrier occurred in the last three age-groups.

In 75 cases tonsils and adenoids were removed; in seven cases tonsils only, and in eight the adenoids only—all, of course, under general anæsthesia. It should be emphasised that the tonsil need not necessarily be enlarged; indeed, of the two it is the small buried tonsil which is more to be feared as a site of continued infection than the hypertrophied one. Such small buried tonsils require to be removed by dissection. In six cases in our series the tonsils were dissected. All cases after operation should wherever possible be returned not to the infected ward from which they came, but to a clean ward set specially apart for such cases. In all our cases when administratively possible this procedure has been carried out.

TABLE V.

No.	Before operation.			After operation.			Remarks.
	T. and N.	T.	N.	T. and N.	T.	N.	
1	+				−	+	14th day. Neg. 18th, et seq.
2	+				−	+	14th and 19th. Neg. 24th et seq.
3	+			+			7th day. Av. in 6th week.
4	+				Av.	+	15th day. Neg. 35th.
5	+				−	+	14th day. Neg. 18th.
6	+				−	+	〃 〃
7	+			+			8th day. Av. 17th.
8		+	Av.		−	+	8th day. Neg. 16th.
9		+	−		+	Av.	10th day. Av. 21st.
10		−	+		−	+	4th day. Neg. 12th and 18th.
11		Av.	+		−	+	10th day and 16th. Av. 21st.
12		−	+		−	+	7th and 14th day. Neg. 21st and 28th.
13		−	+	+			15th day. Av. 21st.
14		−	+*		−	+	7th day. Neg. 21st and 28th.
	7	2	5	3	1	10	

* Adenoids only removed. Remainder T's and A's.
Av. = Avirulent organisms.

Table III. shows the results of the first bacteriological report after operation.

In Table IV. are shown the days after operation on which the first swabbing was done. It will be noted that ten of the total number were first swabbed in the first six days after operation, and that all of these save one were returned as negative. It is not advisable, as a general rule, to attempt to swab until the seventh day after operation, as the tonsil beds are not sufficiently firmly healed before this time. Hæmorrhage may result from disturbing them with a swab.

It will be seen that in all save 14 cases a negative bacteriological report was received from both throat and nose as a result of the first swabbing after operation.

The 14 cases in Table IV., which on a first swabbing after operation were reported to be still positive, are further analysed in Table V.

It will be noted that the nose failed to clear on the first swabbing after operation in 10 of the 14 cases. In one case in which before operation the nose only was returned as carrying virulent organisms, a primary positive (virulent) swab was obtained from both nose and throat after operation. In one other

TABLE IV.

Result.	Day of first swabbing after operation.																	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Over 18	Total.
	Number of cases.																	
T and N −ve ..	4	2	—	3	14	2	7	6	6	3	4	9	1	2	1	3	9	76
T and N +ve ..	—	—	—	—	1	1	—	—	—	—	—	—	1	—	—	—	—	3
T +ve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
N +ve ..	—	1	—	—	2	1	—	1	—	—	—	4	1	—	—	—	—	10
Total	4	3	—	3	17	4	7	7	6	3	4	13	3	2	1	4	9	90

case before operation the throat was returned as carrying virulent organisms and the nose avirulent. After operation the throat swab was returned as avirulent and the nose as virulent. It is possible that an error in labelling might account for this discrepancy. All these cases cleared by the periods after operation stated in the table. It will be noted that in no less than five, later tests for virulence from cases which had originally carried virulent organisms were returned as avirulent.

As to whether the organisms had lost virulence or whether the virulent organisms had died out, leaving only avirulent commensals, we express no opinion.

The average time taken for clearance after operation may be summarised as follows. In 58 cases bacteriological clearance—i.e., negative swabs from nose and throat on first and succeeding swabbing—were obtained in an average period of 17·8 days after operation. In 22 of these cases two or more sets of negative swabs were obtained, and in 36 cases one negative set only. In 18 further cases negative swabs were obtained on first and succeeding swabbing, but owing to intercurrent conditions—e.g., measles—discharge from hospital was delayed. Had discharge from hospital been desirable when the swabs were first known to be negative, the average length of time taken for clearance in these 18 cases was 18·8 days after operation. In 14 cases (detailed above) the first swab after operation was positive (T. and N. 3, T. 1, N. 10). Clearance was ultimately obtained in an average of 31·2 days after operation.

In the earlier cases of the series we always waited for at least two consecutive negative sets of swabs from nose and throat after operation before discharging from hospital. But we found that in no instance where the first set of swabs after operation was returned as negative did we obtain a subsequent positive result from either nose or throat. We therefore now discharge from hospital if the primary set of swabs after operation are returned as negative.

By the kindness of Sir John Robertson, medical officer of health of Birmingham, we have been able to collate all the cases detailed in the above series with a list of known "return" cases from the 1926 admissions to hospital. Only 1 of these 90 cases is alleged to have been responsible for a return case; but since the boy's father, who also suffered from diphtheria, was nursed throughout at home, the responsibility of our case is at least doubtful. This boy was discharged from hospital with two consecutive sets of negative swabs and returned to us 20 days later with a positive nasal swab which proved to be virulent. His mother came into hospital notified as diphtheria. On admission she presented no clinical evidence, and her swabs were negative, but as she had received antitoxin before admission, we cannot express a definite opinion.

Potential Carriers.

In the course of the year, in addition to the series of 90 cases of known carriers detailed above 20 further cases were operated upon, not because they were known carriers, but because owing to the unhealthy condition of the nasopharynx they were regarded as potential infecting cases in spite of the fact that in many of them negative swabs had been obtained before operation was advised.

It is significant that one of these cases taken out against advice whilst he still had a moist nose was responsible for a "return" case of diphtheria.

We have not included these 20 cases in our main series for the reason that they were only regarded as potential carriers. In three of the series primary positive swabs were returned after operation—two from the nose and one from the throat.

Conclusions.

It is generally agreed that local antiseptic or bactericidal applications for the purposes of clearing the diphtheria carrier are virtually useless; diphtheria vaccines in our hands showed no results of value.

Tonsillectomy and the removal of adenoids are procedures of much greater value. Thomson, Mann, and McCartney [6] are of opinion "that the operative treatment of the carrier is encouraging, but limited in value" and "that no satisfactory method of treatment has yet been devised to deal with carriers of bacilli in the throat and nose, or nose only, except in cases where the tonsils continually infect the nasal passages and these seem unusual." Operative treatment for the clearance of the carrier is, of course, no new thing.

Friedberg,[7] Ruh Miller and Perkins,[8] Rabinoff,[9] Keefer Friedberg and Aronson [10] (91·3 per cent. negative within two weeks after tonsillectomy), and Weaver [11] (average time of clearance within 18 days after removal of tonsils and adenoids), have all published series of cases. Pilot [12] states that "the tonsils are the foci which usually harbour diphtheria bacilli in carriers and their removal frequently terminates the carrier state."

Tonsillectomy is not an ideal method, but it is a rational and successful one. Although we have never experienced difficulty in obtaining permission for the performance of the operation under a general anæsthetic, there is this possible objection, together with the other drawbacks of a cutting operation under a general anæsthetic.

Kahn [13] has had very successful results with X rays, and Stewart [14] claims good results from treatment with ultra-violet rays, applied locally. We have so far had no experience of either of these methods.

But, after all, the best way to render the immune carrier of virulent organisms innocuous is to secure that he lives not amongst susceptible children, but amongst children who have also been rendered immune by the safe and certain means provided by toxin-antitoxin.

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OBSERVATIONS ON THE TREATMENT OF DIABETES BY SYNTHALIN.*

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FOLLOWING up the discovery by Watanabe and others that the guanidine intoxication of tetany parathyreopriva (Paton and Findlay) was accompanied by hypoglycæmia, Frank, Nothmann, and Wagner [1] investigated the influence of various guanidine derivatives on carbohydrate metabolism in order to find that which would produce the greatest lowering of the blood-sugar and at the same time little or no toxic effects. They started by testing agmatin, the guanidine compound found by Kossel in herring-sperm and later made synthetically. It is amino-buthylenguanidin. By introducing another methyl group a more effective substance, aminopenthylen-guanidin, was obtained, and this in turn was improved upon by lengthening the CH_2-chain, giving us the compound now known as synthalin. In their papers Frank and his collaborators give numerous examples

* This communication was received by us after the publication in THE LANCET of Sept. 3rd (pp. 517 and 509) of the preliminary reports to the Medical Research Council on synthalin, and of our comment thereon.

[1] Frank, Nothmann, Wagner: Klin. Woch., November, 1926, 2100–2107.

of the influence on the blood-sugar of rabbits and dogs of synthalin given subcutaneously and orally, e.g.:—

In a normal rabbit 3 mg. per kilo (*subcutaneously*) lowered the blood-sugar as follows: before administration, 0·131 per cent.; 1½ hours after, 0·124 per cent.; 6 hours after, 0·115 per cent.; 9½ hours after, 0·057 per cent. Convulsions occurred; recovery by giving glucose; living next day.

Dog (pancreas totally removed): 10 mg. per kilo, *subcutaneously*. Blood-sugar lowered from 0·426 per cent. to 0·090 per cent. in eight hours. Recovery from convulsions by giving glucose.

Dog (pancreas totally removed): 20 mg. per kilo *per os*. Blood-sugar lowered from 0·314 per cent. to 0·274 per cent. in eight hours. Another dog similarly treated: 0·318 per cent. to 0·070 per cent. in 14 hours. Recovery from convulsions with glucose.

They point out that in comparison with insulin the action, although slower, lasts considerably longer. The guanidine compounds anchor themselves for a long time to their substrate and are therefore very liable to act cumulatively. Those animals with marked convulsions and other severe toxic symptoms usually respond to glucose administration, but not infrequently die next day.

I shall not allude further to the other animal experiments recorded beyond saying that certain proof is brought forward to indicate that, in a general way, synthalin, like insulin, favours both the utilisation of sugar in the system and its storage as glycogen. Doubtless before long those in this and other countries who are in a position to test the validity of the assertions made as to the effect of synthalin on experimental animals will publish their results.

Effect of Synthalin on the Carbohydrate Metabolism of Diabetic Patients.

My first tests with synthalin were carried out on two severe cases of diabetes on Feb. 27th, 1927. Both patients (females, aged 23 and 25) have received synthalin continuously ever since, and during these six months have been tested regularly once or twice

TABLE I.—*Details of 13 Cases of Diabetes treated with Synthalin.*

No.	Patient.	Sex and age.	Nature of diabetes.	Duration of synthalin treatment.	Insulin in addition. (See text.)	Apparent result of preliminary treatment.
				weeks.		
1	G. B.	F., 23	Sev.	28	Yes	Good.
2	G. E.	F., 25	„	28	„	Very good.
3	L. S.	F., 59	F.Sev.	3½	„	Good.
4	M. W.	F., 63	Mild	3½	No	Good.
5	S. L.	F., 59	Mod.	5	„	Good.
6	M. G.	F., 66	„	3	„	Marked toxic symp.; treatment discontinued.
7	S. W.	F., 62	„	8	„	Fair.
8	M. K.	F., 45	Mild	1½	„	Apparently no effect.
9	H. R.	F., 35	Sev.	1	Yes	Fairly marked toxic symptoms; treatment not suitable—discontinued.
10	G. B.	M., 58	Mild	1	No	
11	J. G.	M., 48	„	1	„	
12	O. J.	F., 58	Mod.	5	„	
13	A. O.	F., 60	„	2	„	Very little effect—no practical value.

F. sev. = Fairly severe; Mod. = Moderate.
(Details of dosage given later.)

weekly, and daily at times, particularly at first. As supplies of synthalin increased other cases were added, until in all 13 have received treatment for periods varying from 1 to 28 weeks. In addition, tests have been performed on two normal persons. Six of the patients were treated at the Royal Northern Hospital, one at the London Temperance Hospital, and four in the laboratories of the medical unit at St. Mary's Hospital. The remaining two were private patients—moderately severe cases—who refused insulin injections.

In trying synthalin my aim was to decide the following points: (*a*) Does synthalin lead to increased storage of sugar? (*b*) Does it increase the burning of sugar and so lessen the production of acetone bodies? (*c*) In the event (or non-event) of toxic symptoms is there any evidence of damage to the liver or kidneys?

For (*a*) blood and urine analyses were employed; for (*b*) Rothera's test and R.Q. determinations; for (*c*) the clinical signs, tests for urobilinuria and albuminuria, and the hæmoclasic crisis test in two instances. Van den Bergh reactions were not done.

Group (*c*) can be dismissed in a few words. Although it was felt that the liver was probably slightly poisoned in the toxic cases (gastro-intestinal irritation and general malaise), no positive results were obtained with the tests and no trace of jaundice or tenderness over the liver noticed. Only two cases (4 and 5 in table) showed albumin in the urine, and these had no toxic symptoms. Curiously enough the albumin appeared in both instances only after the drug had been stopped for a few days, and when the blood-sugar had risen to a rather high level again. No explanation is offered.

CASES 1 and 2.—G. B. and G. E. have been investigated together throughout. Both had been under my care for insulin treatment for about three years previous to synthalin. During this time the insulin dosage had been very considerably reduced until a balance between diet and dosage had become more or less fixed for the past year. Case 1 required 22+18 units daily for a diet of 35 g. carbohydrates + 90 g. proteins + 114 g. fat, while G. E. required 25+22 units for a diet of 38 C. + 95 P. + 120 F.

EXPT. 1 (Feb. 27th, 1927).—Both patients: no breakfast and no insulin. Both given 50 mg. synthalin fasting.

Blood-sugar values.	G. B.	G. E.
	per cent.	per cent.
Before synthalin	0·176	0·159
35 minutes after	0·201	0·173
80 „	0·173	0·181
180 „	0·156	0·150
240 „	0·128	0·139
360 „	0·116	0·132

The blood-sugar is lowered in spite of the initial tendency to rise.

EXPT. 2.—A somewhat similar test was done on G. B. on June 26th, 1927, but at the same time respiratory quotient estimations were made. To ensure that the blood-sugar should be up no insulin or synthalin was used that morning, but 20 g. C. were ingested at 8.30 A.M.; 60 mg. synthalin taken at 10.30 A.M.

B.S. at 10.30 A.M. .. .. 0·258%. R.Q. = 0·84.
„ 1.30 P.M. .. .. 0·224%. R.Q. = 0·80.
„ 4.45 P.M. .. .. 0·186%. R.Q. = 0·95.

Experiment repeated four days later, but no synthalin:—

B.S. at 10.30 .. .. .. 0·237. R.Q. = 0·86.
„ 1.30 .. .. .. 0·240.
„ 4.45 .. .. .. 0·221. R.Q. = 0·86.

Urine before the meals contained a small quantity of acetone, but no sugar. The urine collected over the synthalin test contained 4 per cent. sugar and more than double the amount of acetone in the early morning specimen. The acetone did not appear to be increased when no synthalin given. This is strange, as in the cases about to be described acetone tends to disappear under the treatment, though in my experience much more slowly than the German workers affirm. Perhaps the large dose had a toxic effect on the liver not accustomed to the preparation. The result makes it difficult to say anything about the burning of sugar; it seems to offset the indication of the R.Q.'s that such is happening. The experiments point to the fact that synthalin causes sugar to be stored. The gradual disappearance of acetone bodies shown to occur in subsequent tests indicates that synthalin must also cause it to be burnt.

EXPT. 3.—Effect of synthalin on two normal persons (August 17th, 1927):—

—	Male, 69 years.	Male, 21 years.
Fasting blood-sugar	0·108	0·098
70 mg. synthalin given.		
2 hours after	0·112	0·098
4 „	0·118	0·092
6½ „	0·106	0·074

No symptoms except those of ordinary fasting. In the first case there seems to be a slight interference with storage, in the second a definite hypoglycæmia at 6½ hours.

Now to return to the treatment of Cases 1 and 2 with synthalin. The patients were kept strictly to the dietaries on which they were balanced by the insulin already mentioned—i.e., normal blood-sugars at 3–4 hours after "insulin" meals. Synthalin was then used to replace some of the insulin without disturbing the blood-sugar values at the "3–4 hour" periods, the insulin being withdrawn as the blood-sugar fell. The preparation was given continuously in cycles of four days: first day, 25 + 10 mg.; second day, 25 mg.; third day, 25 + 10 mg.; fourth day, none. In this way G. B.'s insulin was reduced from 22 + 18 to 10 + 6 units daily, and G. E.'s from 25 + 22 to 10 + 10 in three weeks. In order to lower the insulin still further an additional 10 mg. synthalin was allowed every fourth day. The blood-sugars remained practically steady for the following week and then almost simultaneously both patients complained of loss of appetite, feelings of nausea, lassitude, and slight headache, but no irregularity of the bowels. The "3–4 hour" blood-sugars had risen to 0·135 and 0·140 respectively, when one might have expected them to be subnormal. The synthalin was stopped for a few days and the insulin increased. Treatment was then resumed with smaller doses and gradually worked up until the original amounts of synthalin and insulin were being given again. G. E. was sick once after this, but G. B. not at all. Omission of the drug for four days cleared up the trouble, and she has been all right ever since. The evening doses of insulin were steadily decreased so long as the blood-sugars 3–4 hours after the morning doses remained normal, and for the past two months both have been taking only 10 units every morning and none in the evening. Moreover, just a week ago G. E.'s blood-sugar had fallen to 0·080 per cent. So she was brought down to 8 units once daily. They are both feeling and looking well, weight maintained, and both working eight hours daily. At present they are having 10 mg. synthalin every evening and 25 mg. every other morning in addition to the insulin. In these two and several other cases the acetonuria was very resistant to treatment, and indeed showed an appreciable, if not considerable, increase for a time. In the end it practically disappeared.

CASE 3 (aged 59). Has been on insulin treatment for almost two years. In the latter part of last year she had through neglect allowed incipient gangrene of the toes to develop. Although she made a good recovery when adequate insulin was given, she remained as a borderland gangrene. She was readmitted for synthalin treatment on July 20th, 1927. Previous to admission she was taking 25 + 25 units daily. The diet was rearranged and only 15 + 15 units given so that the blood-sugar would rise. She became stabilised, so that on August 7th, 1927, there was 1 per cent. urinary sugar, a moderate amount of acetone, and a blood-sugar of 0·230. The latter and subsequent blood-sugars were taken four hours after the morning insulin. Beginning on the 8th (i.e., the next day) 25 mg. synthalin were given every morning and 10 mg. every other evening. On the 9th the blood-sugar was 0·206, the 12th 0·190, 15th 0·190, 17th 0·218, 23rd 0·187, 27th 0·168, and the 30th 0·140 per cent. The sugar in the urine and most of the acetone gradually cleared up. She thinks she felt rather better on insulin alone, but is not quite sure.

CASE 4 (63 years), mild, admitted to hospital on June 10th, 1927. Before admission passed about 1 per cent. sugar on 100 g. C. Since admission she has been taking 60 C. + 95 P. + 120 F., and the urine has been normal. Blood-sugar four hours after food on 14th = 0·280 per cent.—high renal threshold. The blood-sugar gradually settled to a fixed figure. Thus on the 28th it was 0·195, and on July 6th and 10th it was 0·210 per cent. Synthalin, 25 mg. every morning and 10 mg. every other night, was begun on the 11th. On 19th the blood-sugar was 0·160, on 26th 0·135, and on August 3rd it was 0·090 per cent. A week after stopping all synthalin the blood-sugar had risen higher than ever—0·283 per cent. Fifteen units of insulin given to this patient fasting, before the synthalin was started, lowered the blood-sugar from 0·160 to 0·098 per cent. in 2½ hours—a very much more rapid action.

CASE 5 (59 years), moderate severity, admitted to hospital on June 7th, 1927, and was given a diet containing 30 g. C. Seven days later the blood-sugar (four hours after food) was 0·330. After another 14 days it was still stable at 0·300 per cent. Next day (29th) synthalin was begun—25 mg. every morning and 10 mg. every other evening. On July 1st the blood-sugar was 0·280, on 19th 0·220, on 26th 0·153, and on August 3rd it was down to 0·115 per cent. The 1½ per cent. sugar in the urine and the small amount of acetone present at the beginning slowly cleared up during treatment. Seven days after withdrawing all the synthalin the blood-sugar had risen to 0·235 per cent.

CASES 6, 9, 10, 11.—Only No. 9 was having insulin (25 + 20 daily). 9, 10, and 11 developed nausea and general malaise in about one week each on 25 + 25 mg. daily and without any noticeable influence on carbohydrate metabolism, so the treatments were abandoned as unsuitable. In No. 6 the results were equally disappointing, but the toxic symptoms were longer in developing.

CASE 12.—An out-patient; intermittent sickness and consequent inability to keep to the diet make the results valueless. She had had the drug on and off for nearly five weeks.

CASES 8 and 13.—No toxic effects after 35 mg. daily, and little, if any, influence on the blood and urinary sugar. In 13 the diet was under suspicion, so details will be omitted.

CASE 7 (62 years), moderate severity. The blood-sugar 2½ hours after a breakfast containing 25 g. C. on June 1st, 1927, was 0·374 per cent.; sugar in urine, 6·5 per cent.; no acetone. With slight restriction of the diet the blood-sugar 2½ hours after breakfast on the 10th was 0·276 per cent.—stabilised. On the same day she began a four-day cycle of 35 + 35 + 35 + 0 mg. synthalin. By the 30th the blood-sugar was down to 0·164, and ten days later to 0·147 per cent. Slight loss of appetite caused the dosage to be reduced to 25 + 35 + 25 + 0. The patient was soon all right again and the blood-sugars varied from 0·140 to 0·150 during the next four weeks; no further cumulative effects. The sugar in the urine had disappeared 3½ weeks after treatment was begun; no acetone found at any time.

Summary.

Synthalin has an action like insulin in so far as it appears to cause sugar to be stored and to be used. The German workers offer proof of this in animal experiments and clinical investigations seem to support it. Confirmation of the former is awaited with interest. Although it resembles insulin it acts very much more slowly and is not nearly so consistent—large doses sometimes producing no appreciable effect and comparatively small ones occasionally giving rise to marked toxic symptoms, which, however, soon disappear on withholding the drug. The great advantage of the treatment is that it is taken by the mouth. Table I. shows my results. Out of 13 cases tested, five seem to have done well so far, one fairly well, two uninfluenced, and five were unable to take an adequate amount of the drug without developing symptoms of poisoning. It is the occurrence of the latter that makes one hesitate just yet to pronounce the *apparently* good results as *really* good, fearing lest the lowering of the blood-sugar, &c., might be due, for example, to a slow, insidious poisoning of the liver cells, interfering in some way with the production of new sugar. Up to the present those of my cases that have done well lend no support to such hypothesis, but they do encourage a further and fuller investigation of the preparation.

In conclusion, I want to thank Dr. P. O. Ellison and Dr. H. H. Sanguinetti for valuable help with some of the cases, and Prof. F. Langmead for allowing me to make use of two of his patients. I am also very much indebted to Mr. W. H. McCallum, of Messrs. Allen and Hanburys, and medical friends on the Continent for so kindly assisting me to obtain the synthalin in sufficient quantities.

MIXED TUMOURS OF THE MOLAR GLANDS.

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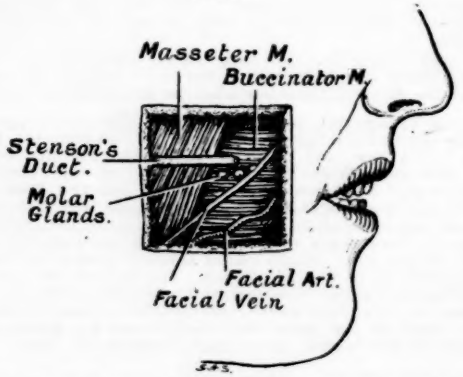
THE purpose of this contribution is not to deal exhaustively with the subject of mixed tumours. It is to draw attention to tumours of this nature arising in the cheek in connexion with the molar glands. In Choyce's "System of Surgery" the question of mixed tumours is summarised thus: "This group of tumours is most commonly represented by the well-known 'parotid tumour,' but others of essentially the same nature are met with in the submaxillary region, lip, palate, and orbit." No mention is made in this work or apparently in any other of the molar glands or the region in which they are found.

Anatomy of the Molar Glands.—The molar glands are about five in number and lie on the outer surface of the buccinator muscle grouped round the site of perforation of the latter by Stenson's duct. (Fig. 1).

FIG. 1.



The anatomy of the molar glands. (Modified from a specimen in the London Hospital Museum, by courtesy of Prof. William Wright.)

Their ducts also pierce this muscle and open into the vestibule of the mouth (Fig. 2). The glands are mainly mucous in character and are developed as solid buds of the buccal epithelium which grow outwards through the buccinator muscle branching frequently and becoming canalised.

It will thus be seen that the parotid gland may be looked upon as a molar gland that has grown backwards over the masseter muscle and become somewhat specialised in function.

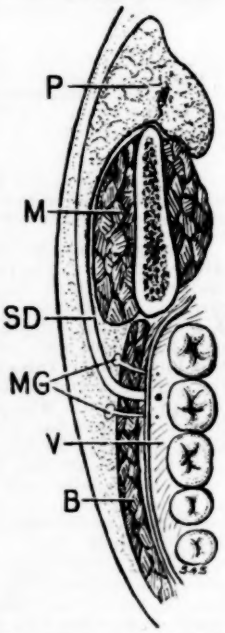
Pathology of Mixed Tumours.—The pathology of mixed tumours has given rise to considerable discussion, therefore it will suffice to mention the following theories of origin: (*a*) They are teratoblastomata—i.e., tumours arising from a pluripotent cell which is capable of producing both epithelial and connective tissue structures. (*b*) They are endotheliomata. (*c*) They are developed from embryonic remnants of the branchial arches. (*d*) They are adenomata which may undergo malignant change. (*a*) and (*b*) are the two most popular theories.

Microscopically mixed tumours present myxomatous tissue, fibrous tissue, immature cartilage, and columns of cells which may be epithelial or endothelial in origin.

Clinical Features.

Mixed tumours usually occur in young adults and form slowly growing, firm, lobulated, sharply defined, freely movable swellings. They may grow slowly for many years, but at any time (even at first appearance) may take on rapid growth and infiltrate surrounding structures. The following cases may be cited as examples of mixed tumours arising in the molar glands:—

FIG. 2.



Diagrammatic horizontal section showing how Stenson's duct and the ducts of the molar glands pierce the buccinator muscle to open into the vestibule. P. = Parotid gland. M. = Masseter. S.D. = Stenson's duct. M.G. = Molar glands. V. = Vestibule. B. = Buccinator.

CASE 1.—A man, aged 20, was admitted to the Walthamstow, Wanstead, and Leyton Hospital under the care of Mr. J. H. Barrs with a lump in the left cheek. It had been present for two years but had been growing rapidly for six weeks. The lump was hard, the size and shape of a walnut, not attached to the skin nor the mucosa of the mouth; it extended forward almost to the angle of the mouth (Fig. 3). The tumour was removed by a horizontal incision through the mucosa from which it was found to be separated by a layer of muscle, the buccinator. It shelled out easily except at one place antero-inferiorly where it was adherent. On section there was a capsule from which some rather indefinite fibrous trabeculæ passed inwards. Between these there was gelatinous substance, a small yellow area 0·6 by 0·8 cm., and a red area of similar dimensions.

The microscopical report, by Dr. A. B. Bratton, was as follows: "The section shows a polygonal-celled carcinoma. The carcinoma cells resemble the epithelial cells of a mixed tumour. The connective tissue is abundant and fibrous, but in one area is hyaline and somewhat suggests fibro-cartilage. Therefore the carcinoma probably arose in a mixed tumour."

About one month after operation the tumour recurred, growing rapidly, infiltrating the tissues of the cheek, and becoming adherent to the mucosa and skin. X ray treatment was employed but apparently had no effect. The greater part of the tumour was, therefore, excised and radium inserted. This, however, will probably not prevent recurrence of such a highly malignant tumour. Dr. Bratton reported that microscopically the recurrence was a polygonal-celled carcinoma in which the carcinoma cells resembled the epithelial cells of a mixed tumour.

FIG. 3.

The characteristic swelling formed by a mixed tumour of a molar gland (Case 1).

CASE 2.—A woman, of 28, was admitted to the London Hospital under the care of Mr. W. S. Perrin with a lump in the left cheek. It had been growing slowly for five years and was quite painless. The lump was one inch in diameter, fairly hard, and had a well-defined edge; it extended forward to the angle of the mouth and was not attached to the skin or mucosa. It was removed by a horizontal incision through the mucosa and shelled out easily. Dr. W. W. Woods reported that microscopical examination showed a mixed tumour of a salivary gland. There has been no recurrence since operation which was one year ago.

I wish to express my indebtedness to Mr. J. H. Barrs, Mr. W. S. Perrin, Dr. W. W. Woods, and Dr. A. B. Bratton.

Clinical and Laboratory Notes.

GONORRHŒAL URETHRITIS IN MALE CHILDREN.

REPORT ON FOUR CASES.

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Gonorrhœal urethritis in males before the age of puberty is a rare occurrence. In the literature of the last 10 years I have found reference to only 45 cases. Alterthum,[1] in America, states that Stümpke collected seven cases and Wolbarst 22 cases. He himself reports 14 cases occurring between 1919 and 1925. In this series the ages ranged from 4 to 13 years. There were no infections of the posterior urethra or rectum, and no complications. As regards their ætiology, he divided his cases into the following four groups: (*a*) Direct genital contact; three cases, in one of which the source of infection was a domestic servant; while in each of the other two cases the source was a female child. (*b*) Sleeping in the same bed with infected persons, but no proof of genital contact; four cases. (*c*) Infection present in other members of the same family, but no evidence of genital contact, and no occupation of the same bed; four cases. (*d*) Source unknown; three cases.

Dryer and Rinhard each report a case of urethral infection in newly born male children 4 and 10 days old respectively, in one of which epididymitis developed. Erich Langer, in Berlin,[2] in a general survey of the subject, agrees that gonorrhœal infection in boys may occur without sexual intercourse. The other possible modes of contagion that he mentions are by sponges, towels, and lavatories, or by bathing with another infected child, which are also the ways by which female children are commonly infected. In older boys direct rectal infection may occur as the result of homosexual practices by men, direct rectal infection in younger male or female children being usually due to the use of infected thermometers or enema nozzles.

Clinical Records.

The cases that I have to report have occurred as follows:—

CASE 1.—A. B., aged 10, attended the Royal Northern Hospital on Dec. 10th, 1920, stating that he had had a urethral discharge and pain on micturition one month previously. One week before his first attendance he had been circumcised; so apparently the cause of the discharge had been attributed, in the first place, to balanitis arising from phimosis. He slept alone, and no source of infection was traced. Gonococci were found in the urethral discharge. He was given an alkaline mixture and irrigations of the anterior urethra with 1/8000 potassium permanganate solution. On Jan. 1st, 1921, he complained of pain in the back; but the discharge ceased that day, and the urine was clear two days later. After five days, however, pus was again found in the urine. On Jan. 19th the prostate was found to be enlarged and tender, and a periurethral abscess had developed proximal to the peno-scrotal junction by Jan. 26th. As this abscess did not drain into the urethra, and remained in statu quo in spite of fomentations, it was incised from the outside early in February. A sinus persisted, and did not finally close until July 7th after the passage of bougies, size 3–7 English, on many occasions. The prostate was found to have returned to normal on April 18th, though no special treatment had been applied to it and no irrigations of the posterior urethra given. The patient was finally discharged on Feb. 13th, 1922, bougies having been passed at increasing intervals up to that date.

CASE 2.—C. D., aged 6, attended the Hospital for Sick Children on June 25th, 1924, with œdema of the prepuce (a long one) and a purulent urethral discharge containing gonococci. Micturition was painful. The mother stated that the discharge was first seen four days before. The patient lived with his grandmother, and four young maiden aunts resided in the same house. He had two sisters, aged 5½ and 4 respectively, who were normal. He had been attending an infants' school, in which were male and female infants together. Irrigation of the anterior urethra with 1/8000 potassium permanganate solution was carried out daily. This was changed to 1/4000 oxycyanide of mercury after three weeks, at which time the first urine after anterior irrigation was found to contain pus, indicating that the posterior urethra was infected. Irrigations of the posterior urethra were then started. Five weekly doses of a stock gonococcus vaccine, ranging from 2½ to 50 millions, were given. The discharge ceased after five weeks of treatment, and the boy was allowed up. One week later the discharge recurred, and the anterior and posterior irrigations were recommenced. In addition, Nos. 3 and 4 English bougies were passed down as far as the compressor on one occasion. The prostate, which at this age is very small, felt normal throughout the disease. By Sept. 2nd all signs had permanently cleared up, and the patient was discharged as cured on Sept. 25th, after three months in hospital.

CASE 3.—E. F., aged 5½, attended the Hospital for Sick Children on Nov. 27th, 1924, with a urethral discharge containing gonococci. Pain on micturition had been present for five days, and the discharge for three days. He had a long prepuce with œdema and acquired phimosis. This boy lived in the same street as Case 2 and attended the same school. The source of infection may have been the same, though Case 2 was cured two months before Case 3 was attacked. The latter had two uninfected brothers and no sisters. Treatment consisted of first subpreputial, then anterior, and, after three weeks, both anterior and posterior irrigations with potassium permanganate solution, the strength being gradually increased from 1/6000 to 1/4000. No vaccine was given. The discharge had ceased in five weeks, but the urine still contained pus. Bougies, Nos. 6 and 7 English, were passed as far as the compressor on one occasion only, and three days later the urine was clear and remained so. The patient was discharged eight weeks after the commencement of treatment.

CASE 4.—G. H., aged 13, attended the Royal Northern Hospital on Nov. 4th, 1926, with a urethral discharge of five days' duration which was associated with pain to begin with. Gonococci were present. He had a long prepuce and congenital phimosis. He had been attending school, and slept with his brother, aged 10, who was not infected. He had two sisters, aged 15 and 17 respectively, who were alleged to be normal. The mother denied ever having had any vaginal discharge. He was treated in the same way as Case 3 except that 1/4000 oxycyanide of mercury was substituted for potassium permanganate. He still had a discharge five and a half weeks after the onset of treatment, so that a No. 15 French bougie was passed as far as the compressor. This increased the discharge temporarily, and gonococci were again found. Passage of bougies Nos. 15 to 17 French on two subsequent occasions cleared up all signs permanently. No changes were observed in the prostate. The patient was discharged after ten weeks.

Commentary.

In none of the above cases was the mode of infection or its source elicited. Cases 2 and 3 may have had a common source of infection. In each case there was a long—and in one case a tight—prepuce at the time of onset. Thus the gonococcus must have gained access to the preputial sac before entering the urethra in the case of congenital phimosis, and probably also in the other cases. This would tend to show that the contact with the source of infection was an intimate one. We have no proof that direct genital contact is necessary to produce infection in a boy, the opinion of other writers on the subject being to the contrary, though I have never come across a case in a man, after taking many hundreds of histories, where the infection had been acquired accidentally. We know, however, that in female children accidental infection without genital contact is the rule rather than the exception. Females over the age of puberty are much less susceptible to accidental infection, as the vulva and vagina (as opposed to the urethra and cervix) become resistant to the implantation of the gonococcus.

Two ways in which, in the case of boys, direct genital contact may come about are, firstly, seduction by an adult woman, of which I have come across two cases, though in neither of these was there any infection transmitted; and, secondly, attempts at sexual congress between male and female children. These attempts are probably imitative, and occur among the children of poor parents with whom they share the same bedroom and often the same bed. I have never

[1] Deutsche Med. Wochenschr., April 30th, 1926.
[2] Geschlechtskrankheiten bei Kindern, 1926.

heard of a case of gonorrhœa in a boy whose parents were well-to-do.

As regards treatment, this is approximately the same as in the case of an adult male. Prostatic massage would appear never to be required, while other complications such as iritis and arthritis do not occur owing to the rarity of prostatic infections. Epididymitis has only been once recorded, and then in a case of a newly born male infant. There has been only one case of periurethral abscess recorded (Case 1 in this series). Infection of the urethral glands undoubtedly occurs, and therefore it is necessary to pass a bougie along the anterior urethra once or twice towards the end of treatment.

Two to three months is the average period required for cure.

I am indebted to Mr. Kenneth Walker for permission to publish the cases that came under my care at the Royal Northern Hospital, and to Dr. D. Nabarro with regard to the cases at the Hospital for Sick Children.

A CASE OF
COMPLETE ABSENCE OF GALL-BLADDER AND EXTRAHEPATIC BILE-DUCTS.

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THE following case is, I think, worthy of record as illustrating one of the rarer forms of congenital anomalies of the biliary tract.

A female infant, aged 4 months, was admitted to the Belgrave Hospital for Children on account of jaundice. She was an only child; the parents were alive and in good health; there had been no miscarriages and no history of tuberculosis.

Past History.—Full-term child; normal labour. Jaundice was noticed on the fourth day and persisted. The child was breast-fed and gained weight steadily, the only digestive disturbance being a little flatulence and vomiting, which occurred a fortnight before admission and lasted only two days. The stools were described as white in colour, but became very dark for a day or two about three weeks before admission to hospital. The parents did not notice anything abnormal in the colour of the child's urine, and stated that the napkins had not been stained.

On *examination* the child seemed well nourished, her weight being 11 lb. 12 oz. The skin was of a moderately deep icteric tint and the sclerotics were of a deep yellow colour. There were no cutaneous hæmorrhages and the mucous membranes were rather pale. The fontanelle, heart, and lungs were normal. The abdomen was somewhat enlarged. The liver could be felt three fingers-breadth below the costal margin; its edge was sharp and hard. The spleen was palpable.

During the four days following admission the child seemed well and contented and gained 2¼ oz. in weight. Breast-feeding was continued. The stools were consistently pale and contained no bile pigments, whilst the urine was dark and contained both bile salts and pigments.

Examination of the blood gave the following results: Red blood corpuscles, 4,892,000; white blood corpuscles, 13,000; hæmoglobin, 77 per cent.; colour-index, 0·79. Films showed some anisocytosis and poikilocytosis. The differential count showed: Polymorphonuclears, 42·2 per cent.; lymphocytes, 46·6 per cent.; myelocytes, 2·8 per cent.; and eosinophils, 8·4 per cent. The fragility of the red corpuscles was normal. Van den Bergh's tests gave a biphasic reaction.

Some slight ecchymosis occurred around the points from which blood was taken, but there were no gross hæmorrhages. The jaundice seemed to vary in intensity from day to day slightly but definitely. On the fifth day the child had a profuse melæna, two of the stools giving a strongly positive guaiac and benzidine test, and showing red corpuscles microscopically. On the sixth day she was paler and weaker and had two quite copious hæmatemeses. From this time onwards there was much melæna and frequent hæmatemeses. The child's condition rapidly deteriorated and she died on the tenth day.

Findings at Autopsy.—With the exception of bile staining no abnormality was found in any of the organs other than the liver and its appendages. There was no ascites. Examination of the brain was not permitted.

The liver was enlarged and of an olive green colour. It was very hard and its surface was definitely granular. There was some irregularity of the anterior border of the left lobe. The duodenum was normal, the papilla was present, and the pancreatic duct was patent. The lymphatic glands which drained the liver were all deeply bile-stained. The gastro-hepatic omentum was in its normal position, as were also the portal vein and the hepatic artery. No trace, however, of the common bile-duct could be found, not even the fibrous cord which so often represents it in these cases. There was no cystic duct, no gall-bladder, and no extrahepatic bile-ducts, neither were any remains of these structures discoverable. The spleen was only slightly enlarged, although easily palpable during life. The pancreas appeared normal.

Microscopical Examination.—The liver showed an extensive cirrhosis mainly in the portal areas in which bile-ducts were numerous. Some of these were distended with bile and some of the larger ducts showed desquamation of their lining membrane and infiltration of the surrounding tissue with small round cells. Areas of liver tissue were cut off as in portal cirrhosis, but bile could be seen in the finer biliary radicles, some of which were considerably distended. Some areas of liver had undergone acute necrosis and these were particularly bile-stained. The pancreas showed a slight degree of fibrosis, but otherwise appeared normal. The lymph glands and other organs showed no abnormality.

Comments.

The abnormality most often reported in cases presenting similar symptoms is a common bile-duct impervious or deficient at some part of its course. Other cases described range from these conditions to complete absence of all extrahepatic bile-ducts and gall-bladder, intermediate cases presenting every variety of abnormality. J. B. Holmes [1] has collected over a hundred published cases of congenital obliteration of the bile-ducts and has given diagrams of the conditions found.

The pathology of the condition has been disputed, and several different theories put forward to account for it. Syphilis and fœtal peritonitis have each been held responsible, though why the results of these two conditions should be limited to the liver and its appendages it is difficult to see. John Thomson [2] considered that there was, to begin with, a congenital malformation of the bile-ducts due to defective development, and that interference with the outflow of bile caused catarrh and finally blocking and obliteration of the ducts, the cirrhosis of the liver being a secondary manifestation. Sir Humphry Rolleston and L. B. Hayne [3] regarded the condition as primarily due to poisons derived from the mother and conveyed to the liver of the fœtus, where they set up a mixed (portal and biliary) cirrhosis and a descending obliterative cholangitis analogous to obliterative appendicitis. In support of the theory of the maternal toxin is the fact that there are several recorded cases of parents having more than one child similarly affected, and in Thomson's series there were two such cases. In no case, however, has the mother shown evidence of such toxins.

Stanley Wyard [4] suggests that the condition may be due to an ascending cholangitis due to a toxin which is a constituent of a pathological liquor amnii. Holmes says:—

> "It would seem that the cause of congenital atresia of the bile-ducts must be sought, as a rule, in a faulty development from the primary tissues. What the causes of this are we scarcely know. They are doubtless the same as those operative in the production of atresias of other tubular structures."

Leonard Parsons and Evelyn Hickmans [5] consider that

> "whatever be the cause of the condition it is one which attacks the liver parenchyma at as early a stage as the bile-ducts, and offers definite evidence that the whole process may be an intrahepatic one."

As regards treatment Holmes suggests that as in 16 per cent. of all the cases he collected the anatomical relations were such that operative relief was theoretically possible, the biliary tract should be explored as soon as the diagnosis is sufficiently established, with a view to making an artificial opening for the bile to reach the duodenum, in consideration of the otherwise hopeless nature of these cases.

[1] Amer. Jour. Dis. Children, 1916, xi., No. 6, p. 405.
[2] Edin. Med. Jour., 1891–92, xxxvii., 523, 604, and 724.
[3] Brit. Med. Jour., 1901, i., 758. [4] THE LANCET, 1914, ii., 495.
[5] Amer. Jour. Dis. Children, 1926, xxxi., 461.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING AT EDINBURGH.

(*Continued from p. 608.*)

SECTION OF PATHOLOGY AND BACTERIOLOGY.

WEDNESDAY, JULY 20TH.

THIS Section met under the presidency of Prof. J. LORRAIN SMITH (Edinburgh). On the first day Dr. ARCHIBALD LEITCH (London) opened a discussion upon

GROWTH IN ITS PATHOLOGICAL RELATIONS.

He pointed out that in extra-embryonic life, in general, the reproductive powers of the cell become markedly restricted, this varying in degree with different tissues—the power of growth sometimes being absent and at other times constantly present. In the body this process of cell production, however manifest, is always under rigid control and at no time lawless. Although, as tissue culture experiments show, this proliferation may become limitless in an alien environment, when restored to the body the cells once more conform to the very rigid laws controlling their multiplication. In wound repair the more obvious process was that of proliferation, but that of inhibition, controlling the amount of new tissue produced, was hardly less mysterious. The boundaries between reparative growth, hyperplasia, and neoplasia were ill-defined and no rigid separation was possible between benign and malignant tumours. He held that the cell in neoplasia had no altogether new properties differentiating it from those found in reparative processes, which led him to the conclusion that tumours arise only in those cells capable of multiplication in post-embryonic life, and that if other elements than these are present, they are derived from fœtally segregated cells in Cohnheim's sense of the term. It was possible that in many of these apparent exceptions the appearance of such tissues as bone and cartilage were due to the rather remarkable process of metaplasia possessed by the connective tissue cell. The totally different behaviour of malignant cells in the body could only be explicable along two lines—either that they had become associated with an adjuvant—the parasitic theory lately developed by Gye and Barnard—or that they had developed in an advanced degree an already existing property. Referring in detail to the former hypothesis, he declared that it was entirely based upon experiments carried out with a single variety of growth, the Rous sarcoma of fowls—a growth whose true nature had never been agreed upon. Its properties were peculiar and were shared with no other form of neoplasm. Gye and Barnard's thesis turned upon the true sarcomatous nature of this growth, and also upon their claim to have cultivated a virus from other neoplasms; if either fact were incorrect their theory became void. With regard to the first point, the peculiar characters of this tumour distinguished it from all other growths. Whilst unable to give it a definite apellation, Dr. Leitch did not regard it as a sarcoma but rather as a spreading necrobiotic process of unknown origin. Even in the smallest nodules of the growth the necrotic process followed fast upon the neoplastic. Turning to the experiments in which the activation of chemically inactivated extracts was produced by what were presumed to be cultures of the virus, Dr. Leitch remarked upon the natural great variability in activity of the Rous tumour extracts. Two injections of the same material—treated by chemical destructive agents so as to reduce its activity to near vanishing point—injected into the same bird might give totally different results; the one a tumour, the other nothing. Many other conflicting factors were at work which could determine the appearance or non-appearance of tumours when extracts of almost extinguished activity were used. The borderline between total destruction of the activity of extracts by chemicals and the damage necessary for the removal of the virus portion was narrow. In some experiments the so-called chemical factor alone gave rise to tumours, in others the combination of the two supposedly essential factors failed to produce a tumour. In conclusion, the speaker held that there had been no clear demonstration of a dual nature of the infecting agent and, therefore, no demonstration of a virus of cancer. The one other form of mouse sarcoma which, according to Gye and Barnard, was filtrable had not shown this property in the hands of other investigators.

Cell Proliferation.

Prof. ROBERT MUIR (Glasgow) dealt with the processes of cell proliferation in general. The subject, he said, had been extended of recent years by means of experiments upon tissue culture and upon the filtrable viruses. Dealing with the process of repair, he criticised the assumption of special substances (trephones) being concerned in this process. There was no evidence for such a phenomenon under normal conditions within the body, and a strict application of the results of tissue cultures to the processes of repair was not permissible. When proliferation stopped, in the healing of a wound, was it to be assumed that the supply of such substances also stopped simultaneously? The probability was that the supposed trephones were only food substances. In hypertrophy the demand for overgrowth must originate in the cells themselves. Hyperplastic conditions might pass over into tumour formation, as in the hepatomas and carcinomas arising in cirrhosis of the liver; in these cases the neoplastic focus would appear to start in the centre of the hyperplastic area and away from the reactive process. Dealing with tumours, he said that the future method of division was likely to be into filtrable and non-filtrable groups; the former group, though now small, might grow more extensive. In the large group of non-filtrable tumours he differentiated (*a*) those due to irritation, and (*b*) those attributable to developmental influences. The former followed upon a long history of irritation and were simple in their histological structure. The latter were often complex and were to be recognised rather by their character than by their site of growth; they were tumours which often appeared at an early age, as, for example, the neurocytomas and the blastocytomas. It was quite possible for apparently similar tumours, evolving in the same way and clinically indistinguishable, to originate in both of these classes, as, for example, the hepatic carcinoma of cirrhosis and a case he had recently observed of a malignant hepatoma in the otherwise healthy liver of a child.

Prof. SHAW DUNN (Manchester) referred to the difficulty in framing a definition of tumours so as to exclude such conditions as Hodgkin's disease and mycosis fungoides. The very definite effect of irritants, confirmed by animal experiments, provided a means of understanding the genesis of certain growths; those of the mouth and possibly many others of the alimentary canal were attributable to this influence. Other tumours seemed to show a capacity for originating in damaged organs—e.g., those of the liver referred to by the previous speaker—the hypernephromata, which seldom seemed to take origin in an entirely healthy kidney, and the epitheliomata originating in scars. The frequency with which malignant tumours developed from simple ones was uncertain, but the evidence in many cases was clear. Polyposis of the large intestine was a case in point; this was often a familial disease and in about 50 per cent. of the subjects cancer developed. Prof. Shaw Dunn cited other examples of hereditary and familial conditions associated with carcinoma. Of special interest, though a rare condition, was xeroderma pigmentosa; in this condition light was known to be the accessory factor in producing carcinoma and could be controlled.

Prof. M. J. STEWART (Leeds) discussed the question of tissue displacements and their connexion with tumour growth. The most widely known of these was the adrenal rest, which, however, was frequently met with in situations other than the kidney. In a recent large series of post-mortem examinations he

had noted eight of these formations in the liver, six in the broad ligament, five in the spermatic vessels, one in the epididymis, and one in the testicle. These findings were of importance in connexion with the Grawitz view of hypernephromata, against which he summarised the following facts: (1) that some of these tumours show lumen formation, either with or without the adrenal type of cell; (2) that true hypernephromata do not appear to arise elsewhere than in the kidney; (3) that they are not associated with virilism which as Glynn had shown is so prominent a feature of true adrenal tumours; and, finally, (4) that the Grawitz tumour is equally common at both poles of the kidney, whilst the adrenal rest is especially found at the upper pole. Prof. Stewart further described the epithelial heterotopias of the alimentary tract and discussed the possibility of their being the origin of malignant disease; for this he contended there was no evidence. He thought that the occurrence of teratomata, apart from those of the sexual glands, gave general support to Cohnheim's theory.

Prof. E. H. KETTLE (Cardiff) thought that the discussion came at a most difficult stage in our knowledge of tumour growths. Some years ago most of the more disturbing facts of the present day were unknown and some years hence their bearing on the general problem would doubtless be better understood. He felt great doubts about the supposed essential similarity of the processes of innocent, malignant, and hypertrophic growth. Growth and proliferation were not identical processes. The work of T. S. P. Strangeways tended to show that mitosis in some cases was a reaction of the cell towards an altered environment and that in this plastic state it is more adaptable. Hence different types of cell proliferation doubtless exist, diverted towards different ends, and similar distinctions may be ultimately be drawn amongst tumour processes. He refused to regard the pathological investigation of the processes of abnormal growth as a dead subject, and considered that renewed application of the analytical method to such conditions might lead to an ultimate recognition of immediate causes.

The PRESIDENT, in closing the discussion, said that he was in agreement with Prof. Kettle that in growth there were many phases. In the division of certain cells—as, for example, those of the rete malpighii—one of the progeny was destined for growth and differentiation, the other retained the capacity for further pululation. There were therefore two processes to be distinguished—growth and proliferation. It was an unanswered question in which of these phases cancer affected the cell.

THURSDAY, JULY 21ST.

The meetings on the second and third days of this Section were conjoint meetings with the Section of Comparative Medicine. On July 21st Prof. T. J. MACKIE (Edinburgh) presided over a discussion on

IMMUNITY.

Dr. R. A. O'BRIEN (London), in opening the discussion, said that he desired to deal especially with the practical or applied side of the subject and to review the recent solid achievements and future problems. It might be said that among the achievements of modern medicine were the practical abolition, from this country at all events, of typhus, cholera, dysentery, typhoid, and plague. Here credit must be given chiefly to the hygienist and sanitarian, with the immunologist in the second place, and the clinician last. In the future he believed that most credit for advances would go to the immunologist, who to his other weapons was adding that of the experimental investigation and control of epidemics. The importance of food factors in this connexion was very great, since it was frequently found that the germs of epidemics could remain living, but inactive, in animal communities provided the nutrition of these was duly maintained; but when diet became insufficient or ill-balanced an outbreak of infection speedily followed. The hollow needle, as a weapon of offence and defence, was already firmly established both in animal pathology—for example, in swine fever, roup, rabies, rinderpest, and in the human subject in connexion with enteric prophylaxis, tetanus, diphtheria, and rabies. Reviewing the agents utilisable for this purpose he instanced preventive vaccines; these had sometimes been employed in the living state, but which in the future he considered would be universally replaced by dead vaccines. The latest advance in this direction was the use of Calmette's B.C.G. in tuberculosis; about the value of this agent very contradictory opinions had been expressed. In all vaccines of this type there was a deplorable lack of agreement as to dosage and a total absence of any official standards of activity. A second method of producing immunity was by the injection of bacterial filtrates. In nurses employed in fever hospitals the introduction of this method of affording protection against scarlatina gave striking results; the same could be said of diphtheria. In veterinary pathology the method was the one now employed in connexion with braxy and black-leg. A third method was the use of toxoids and allied substances, which were found to give a solid immunity in diphtheria. The use of toxin-antitoxin mixtures had been largely developed, extended, and varied since its introduction by Theobald Smith in 1907. In applying this method it was all-important to choose a correctly balanced mixture of toxin and antitoxin. Excess of the one would produce disastrous results and of the other merely passive immunity which was not the desideratum. The position might be well illustrated by the results of giving immune serum (convalescent) to children in measles. Administered early in the incubation stage it prevented any development of the virus and conferred a purely passive immunity, merely postponing the evil day of infection. Given when the disease was declaring itself it had little but a slight therapeutic action. Given in an intermediate stage it had the effect of aborting the disease whilst such infection as did take place induced an active immunity in the child, sufficient to guard against future infections. In discussing some of the current practical problems of immunisation the speaker referred to the puzzling phenomenon of local infections occurring in highly immunised animals; this phenomenon, he said, was well illustrated in anti-pneumococcus immunity.

Prof. C. H. BROWNING (Glasgow) commented upon the enormous growth of the literature of immunity in recent years. The study of the serum reactions dated from the discovery by von Behring of antibody in this cell-free body fluid. Prof. Browning proposed to discuss (1) antigen-antibody reactions, their phenomena and the questions arising out of them; (2) the part played by immunity in chemotherapeutic action; and (3) Ehrlich's receptor theory. Antigen-antibody reactions were usually evidenced by some physical alteration in the mixture and hence a series of "indicators" might be recognised and correlated with the reaction; amongst these "indicators" lipoids played an important part though not an essential one. With regard to the nature of antibodies, there was some evidence that immune bodies might differ qualitatively as well as quantitatively, immature hæmolysin having properties different to those of the mature product. The essential factor in calling out the antibody was the injection of the antigen, but in any conception of the process the occurrence of natural antibodies must be borne in mind; their presence was in some cases entirely inexplicable, and they might be termed "metabolic accidents." He believed, from evidence brought forward by a variety of workers, that the common prototype of immune antibodies exists normally in blood plasma, in a relatively undifferentiated state, and that it undergoes a specific modification or development in the process of immunisation with an antigen. The scanty evidence available went to show that antibodies were definite substances in the serum, but that the complement might more correctly be regarded as a physical state of that body. Recently there had been a tendency to identify the reticulo-endothelial system with the production of antibodies, but the results of experiments were inconclusive and

attempts to lower an animal's resistance by "blocking" the cells of this system with dyes had showed that this result had not the effect in diminishing resistance which it should have if this system were of prime importance. Antigens had, up till recently, been looked upon as protein in nature, but some results had been obtained showing that lipoids and carbohydrates might exert this function. The nature of specificity was still obscure, but H. H. Dale's experiments with racemised albumins showed that specificity was connected in some cases with the order of the amino-acid linkage. In regard to chemotherapy, animals cured of trypanosome infections frequently showed some degree of subsequent immunity, which could be produced by this means alone. The immunity response, therefore, seemed to be intensified and intimately linked with the drug's action, since other trypanosomicidal agents did not produce the same result. In conclusion, Prof. Browning urged the restoration of Ehrlich's receptor hypothesis to something approaching its former pride of place, since he maintained that in its broader aspects and shorn of its later-day trimmings it formed the most satisfactory working hypothesis for the manifold facts of immunity.

Prof. ROBERT MUIR gave a general review of the problems of immunity; the phenomenon, he said, involved changes in the living cells and in the serum, to the last of which most of the attention given to the subject had been paid. A multitude of laboratory reactions, agglutination, precipitation, complement fixation, &c., had been evolved, most of which were the physical evidences of combination between antigen and antibody. This was the essential fact of these reactions and, on the whole, its nature appeared chemical rather than physical. The varied types of antibodies had received various names for convenience, but Prof. Muir suggested that the serum antibodies were not a set of disjointed entities but a single entity with distinct moieties. A similar conception might be applied to complement. Differences in antigenic action were due to minute differences in structure of the antigens. There was no common antibody for bacterial protoplasm, but closely related bacteria were antigenically distinct and similar individual differences might be met with between the cells of animals of the same species, as had been shown by Ehrlich and Morgenroth for the isolysins of goats. Did the body produce something corresponding to every possible variation of antigenic substance as Ehrlich's hypothesis suggested? Prof. Muir discussed the possibility of the dissociation of antigen and antibody from combination in the body and adduced evidence for the occurrence of this dissociation. The local immunity of tissue, upon which Besredka had recently insisted, was an important consideration and worthy of full investigation.

The Relation of Sensitisation to Immunity.

Prof. E. L. OPIE (Philadelphia) spoke of the relation of sensitisation to immunity, which was a very puzzling phenomenon. In animals in which an injection of antigen produced the Arthus phenomenon, the antigen became fixed at the site of this reaction and did not pass into the body; this was therefore a protective effort guarding more vital organs from the dangerous results of anaphylaxis. The phenomenon was capable of reversal and an animal could be sensitised with antigen so that it showed the phenomenon following on a local injection of antibody. A like result was obtainable in the case of generalised anaphylaxis. The conclusion was that wherever and whenever antigen and antibody met, a reaction occurred the nature and extent of which was determined by the physiology of the tissue involved, so that such diversified results as the Arthus phenomenon or general anaphylaxis might take place. He thought that all immunity phenomena were matters of importance to the animals concerned and doubted if such a thing as a "metabolic accident, described by Prof. Browning, ever occurred.

Colonel W. F. HARVEY (Edinburgh) detailed a series of experiments carried out by him in India in order to study some of the factors influencing the immunity conferred by vaccines, with especial reference to reinoculation. The work had been done upon pigeons, the organism of fowl cholera being used as the infecting agent. He showed that in the conditions described immunity only lasted for about five months and that for reinoculation a dose considerably smaller than the initial one gave a satisfactory result; further, that the reinoculated animals retained their subsequent immunity for a longer period than those receiving a single treatment. He suggested that an animal once inoculated always bore the impress of this procedure and never afterwards reacted quite like a normal one.

Prof. D. C. MATHESON (Edinburgh) spoke briefly upon the question of practical methods. Living vaccines were used in immunisation against epizootic abortion and also in pleuro-pneumonia in bovines. The general principle was to introduce the virus at a site remote from that in which it normally flourished, and where conditions must be considered unfavourable for its life. The procedure of immunising the mother in lamb dysentery was a new one. In the bacillary white diarrhœa of fowls the carrier birds could be detected by the agglutination test and healthy chickens reared from the eggs of uninfected birds.

Dr. HEDLEY WRIGHT (London) said that acquired immunity was generally the result of antibody activity, but in recent work there was a strong suggestion that a local cellular immunity might exist. In pneumococcal infections the general immunity appeared rapidly, whilst the demonstration of antibodies was difficult; this was simply a result of deficiencies in technique. Changes in the way in which organisms grew in the blood of the animals gave earlier evidence than the accepted immunity reactions. In his opinion the evidence for the existence of a cellular immunity was slight. Dealing with the local infections of highly immunised animals as, for example, the cardiac valves in ulcerative endocarditis, the organisms in this case were relatively avirulent, and the immunity of the patient high. The inability of the latter to deal with the organisms was, in the speaker's view, an anatomical one, the organisms on the cardiac valves being shielded from the ordinary attack. Septicæmias were of different types in accordance with the state of the subject's immunity. In some cases the organisms multiplied in the blood, in others, as in the case of endocarditis, they tended to die out.

Dr. W. H. ANDREWES (Ministry of Agriculture) discussed immunity in veterinary medicine. The vaccine of contagious abortion was eliminated rapidly unless the animal was pregnant, when the organisms persisted in the uterus, or unless the mammary glands were active, when the organisms persisted over long periods in the milk. In trypanosome infections a chemotherapeutic agent might be curative in an infection of a normally resistant species, but inert in a susceptible one. Hygienic measures were largely responsible for improved conditions amongst animals in tropical countries and in South Africa horses, sheep, and goats could now be kept in many districts in which formerly this was impossible. In veterinary medicine the economic problem was the directing factor, and therefore the pole-axe was often preferable to the immunising syringe. In such diseases as glanders and rinderpest, in this country, the use of the former instrument was advisable.

Prof. MACKIE said that one of the chief obstacles to further advance in this field was our lack of information as to the weapons of offence and defence possessed by the organism as distinct from the host. Investigations tended towards an elaborate analysis of antibody reactions and the main problem was lost sight of. Natural immunity, a most important phenomenon, could only rarely be attributed to this means of defence and solid immunity might coexist with an absence of antibodies. He did not think that the field of colloidal chemistry, into which present investigations were leading, was one in which much knowledge could be gained of the processes of resistance to disease.

FRIDAY, JULY 22ND.

On the third day of the meeting, Principal O. CHARNOCK BRADLEY being in the chair, Prof. BASIL BUXTON (Cambridge) opened a discussion upon the

ASPECTS AND PROBLEMS OF COMPARATIVE MEDICINE.

He said that at the present time general agreement existed as to the value and desirability of the study of comparative medicine. By many this was regarded as a new movement, but it was not so. Actually steady progress was going forward in comparative medicine, but the necessities of modern medicine, leading to division of labour and specialisation, resulted in widespread general ignorance of what had been and was being done. Great progress had been made especially in the tropics, where, under the pressure of economic conditions, adequate facilities had been forthcoming for the investigation of diseases caused by protozoa and invisible viruses. In comparative pathology that coöperation between specialists in human and animal medicine was essential. Such collaboration need not be limited to the study of diseases common to man and animals, although where such a relationship existed it enormously facilitated the investigation of such diseases. Tuberculosis and the study of tumours were notable examples; everyone was familiar with the great gain to man accruing from the study of the variolas of lower animals. It happened sometimes unfortunately from the experimental point of view that organisms causing disease in man were non-pathogenic to the lower animals. Here a comparative study of closely resembling conditions, such as canine distemper and influenza, might yield valuable results. Again, the investigation of animal diseases due to invisible viruses, rinderpest, foot-and-mouth disease, and distemper, were yielding methods of immunisation which might prove of great interest and utility in human disease. As an outcome of the study of the anaerobic infections of man, which had been largely stimulated by the war, he predicted a more intensive and fruitful study of these in the lower animals. It was probable again that certain diseases in animals kept under apparently normal conditions were due to deficiency in accessory food factors. It was still doubtful as to what extent experimental results with one animal in this connexion were applicable to other animals and to man. White rats were little affected by the absence of vitamin C from their diet, but bred ill under such conditions. In general the picture of deficiency diseases varied with the species. More important than the actual deficiency diseases themselves were conditions resulting from minor degrees of deprivation, leading to lowered resistance to bacteria; under such conditions organisms normally present in the animals and producing no ill-results, might assume pathogenic properties. The importance of mineral metabolism was great in animal pathology; pastures with a low mineral content being of little nutritional value for sheep, the reproductive capacity of these animals grazing on such pastures was low and the percentage of deaths amongst the offspring high. Amongst other facts recently discovered from metabolic investigations was the realisation of the bacterial defence conveyed to young animals by colostrum; there was a high iodine content in this material and the feeding of iodide to mares would prevent joint-ill in foals. Prof. Buxton thought the question of the relation of iodine to the immunity of the newly-born animal worthy of investigation. Another subject which offered a wide field for research was the physiology of reproduction, which was being studied at the Animal Nutrition Institute at Cambridge. One of the largest subjects in human medicine was that of immunity, and in particular artificial immunity. Here animals were essential because only on them could the necessary critical experiments be made, whilst the subject was of no less importance in veterinary medicine in the control of epizoötic and enzoötic diseases.

Dr. ANDREW BALFOUR (London) commented upon the manifold problems connected with the subject under discussion. Human and veterinary medicine were essentially one; this union was best seen in the domain of tropical medicine in which divorce had never taken place and the subjects were historically connected. He recalled the fact that in the very room in which he was speaking 25 years ago an amazed audience had listened to Manson's announcement of the discoveries of Ross in elucidating the mysteries of malaria. What had been his subject? Sparrows, mosquitoes, and protozoa! From a study of tropical trypanosomiasis sprang a large part of modern chemotherapy. Comparative investigations had also led to the elucidation of helminthology, bubonic plague, and other diseases. Human tropical medical research depended upon the pursuance of the experimental method and a close relation between the veterinarian and the medical man. In all experimental work in these fields a better knowledge of veterinary work would be a great boon to the worker upon human diseases, who often was largely ignorant of the natural ailments of his experimental animals and might be led into error by his ignorance. In tropical medicine he saw the beginnings of a cleavage between the two subjects which was extremely undesirable. It was of course necessary in routine work, but in research human and veterinary studies should combine and should be housed under the same roof. He welcomed the establishment of a section of comparative medicine by the British Medical Association as a forward step.

The Filtrable Viruses.

Dr. ANDREWES said that one of the chief of the current problems in veterinary medicine was that of the filtrable viruses, in this country in reference to distemper and foot-and-mouth disease and in other parts of the world in connexion with rinderpest, African horse sickness, &c. Little could be done in any of these maladies except to demonstrate the presence of the infecting agent and in certain cases to produce some degree of immunity. An advance in any one of these diseases would herald a general advance in our knowledge of the others. Deficiency diseases were of importance in the pig, the dog, and in poultry, but not of noteworthy importance in other animals, least of all in the herbivora. Cattle, sheep, and horses were unlikely to be in conditions which would engender an avitaminosis and experimental efforts to produce this in cattle had failed. Veterinary pathology had the great advantage over medical pathology that the worker could utilise the animal in which the disease naturally occurred in his experiments. Great caution was necessary in applying results obtained with one species to others. This danger was exceedingly well exemplified in drug reactions and vegetable intoxications familiar to veterinarians, and even more so in bacterial infections.

Prof. J. LORRAIN SMITH welcomed the institution of the Section of Comparative Medicine. The application of the experimental method was essential to the solution of any problem in medicine. The first light shed upon cirrhosis of the liver, a disease long wrapped in mystery, was gained from the investigation of a disease of cattle in Africa. As a result of experiments we were to-day able to reproduce all phases of cirrhosis of the liver by the application of tar to the skin of animals. From being a disease enveloped in mystery it was now one which could be produced at will. In like manner arteriosclerosis in animals could be produced by varying their diet. Our modern knowledge of diabetes depended upon an experiment on the dog performed by Minkowski in the 'eighties. By application to the experimental method we were widening our conceptions, which was a greater gain than the mere incidental triumphs of pathology or bacteriology.

Prof. C. H. BROWNING said that in studying disease we should free ourselves of the common notion which regarded animals in the light of a defective man and a substitute for him in experimental investigations. To be approximately accurate it was necessary to comprehend a great deal about the animal's physiology and pathology. We tended to regard medicine too much through the eye of the rabbit! We lightheartedly constructed groups of bacteria from results obtained with the serum of the rabbit, whilst

with another species of animal the same types might not emerge. Too close attention to details of this sort constituted a bar rather than a help to progress.

Coöperation between Medical and Veterinary Professions.

Mr. J. MCALLAN (Veterinary Department, City of Aberdeen) said that coöperation between the medical and veterinary professions was of paramount importance to public health. The services of a veterinarian were essential in order to preserve the public from bad food supplies. The medical officer of health should be the administrative head of the department and the veterinarian under him should have control of meat inspection and the milk-supply. The control of tuberculosis in cattle was a matter for combined work between the two divisions, the veterinarian being responsible for the field work; in this capacity he should supervise the production of a clean milk-supply.

Prof. MATHESON spoke of his work in connexion with the Zoological Society of Scotland, where, for the last 14 years, he had been responsible for post-mortem examinations upon all animals dying at the Zoo. Anthrax was excluded before the examination was proceeded with. Intestinal obstruction was a common finding. Tuberculosis was present in a large number of birds, being found in about 10 per cent. of domestic poultry. With regard to tumours, in the first 12 years of this work he only encountered one tumour, a renal growth in a monkey, but in the last two or three years a few more had been seen; they were not uncommon in domestic animals. Gastric cancer and cancer of the alimentary tract or mouth was rare in the lower animals. Papillary overgrowths, akin to those found in coccidiosis of the liver in rabbits occurred in the galactiferous ducts of cows which were the subjects of mastitis.

Dr. R. A. O'BRIEN said he was much impressed with the value of coöperation between the veterinary and medical sciences. It was necessary that money should be forthcoming to advance research, and here the value of field work gained a more ready appreciation and elicited a quicker response than did the less obviously useful academic research. To prove even minor points in animal experiments the difficulties were great and, as in all biological research, large masses of material were a necessity if results were to be reliable. The score of expense was a heavy one. In field experiments the necessary conditions could only be obtained by the coöperation of owners who were often unwilling to coöperate in the conditions requisite for a properly controlled experiment; their point of view was easy to see. He thought this was largely a matter of education and not insurmountable.

Dr. T. G. NASMYTH (Edinburgh) desired to make a confession of his faith in the present and future of comparative medicine in which he had been engaged since, 55 years ago, he first studied veterinary medicine on the farm as a medical student. Years ago he had made the discovery that horses in coal-mines did not suffer from tetanus, the explanation of which had only been forthcoming much later. The outstanding problem in relation to epidemics and epizoötics was the factor he would label "Z." The organisms and the subject existed side by side—some of us were carriers—and yet only occasionally did epidemics occur. Leprosy, cholera, and typhus had disappeared; yet many of the conditions under which they flourished still remained. He strongly advocated that veterinary colleges should become part of the universities and that research into the therapeutics as well as into causation of animal diseases should be prosecuted in veterinary colleges.

Dr. F. A. E. CREW (Edinburgh) said that it was unnecessary to demand coöperation between the two professions since it was always forthcoming between individuals when the need existed and was lacking only in administrative departments. He agreed that controlled experiments with the human subject were impossible, but, as a believer in the universality of biological processes, he held that these could be adequately carried out with other genera. The object of the present discussion, as he saw it, was to proclaim aloud to those in power, bureaucrats and therefore presumably lacking in knowledge and of doubtful morality, that such coöperation was necessary and that it was for them to provide the necessary facilities and money. He believed that the future evolution of man and of animals was within human control, and that by attention to resistance and natural immunity it might be possible to develop disease-resisting strains.

Mr. POOL referred to the contributions made by bacteriology to our knowledge of animal disease. Mastitis in cattle was an infectious disease, associated with the presence of streptococci, upon which further knowledge was desirable. He made a plea for patience in research work and strongly deprecated the hasty issue of ill-considered reports, under pressure from departments which subsidised research. A little more consideration and maturity would greatly add to the value of many articles.

Mr. T. W. M. CAMERON (London) raised the question of the meaning of comparative medicine. It was not synonymous with the study of diseases which man shared with animals, but a comparison of the results of investigations made over the many fields of medicine. Comparative pathology should be a subject apart and not an appendage of human pathology and bacteriology. It was the study of such processes as the varied appearances due to infection with the tubercle bacillus in different species and the evolution of the hydatid cyst which he understood by comparative pathology.

Prof. M. J. STEWART, Dr. DUNNE, Major G. W. DUNKIN, and Prof. E. GLYNN also contributed to the discussion.

SECTION OF PREVENTIVE MEDICINE.

WEDNESDAY, JULY 20TH.

THIS Section met under the presidency of Prof. P. S. LELEAN (Edinburgh) to discuss

PUBLIC HEALTH ADMINISTRATION.

The main question considered was whether all health administration—e.g., in towns, schools, and factories—should be concentrated in a single department, and whether the immediate control in each executive area should be vested in a single individual.

Dr. A. S. M. MACGREGOR (Glasgow) said that a rigid separation between curative and preventive medicine could no longer be maintained. The size of the unit lay at the root of the problem. Larger local authorities could apply the numerous public health measures, whereas small authorities could not carry out their duties efficiently. The MacLean Committee (1918) had recommended the abolition of the guardians and the Royal Commission on National Health Insurance had recommended the abolition of insurance committees. The insurance scheme should include a competent midwifery system and should be extended to apply to dependents. The Scottish Consultative Council (1920) favoured unification of the local authorities concerned with health and an adequate medical service for every member of the community. The Consultative Council of 1923 recognised the present overlapping and waste and the fact that many administrative units were too small to be efficient, and put forward one health authority for each area as the objective. "Regional administration" had been adopted for electricity and was desirable for many health problems—e.g., non-pulmonary tuberculosis, puerperal fever, ophthalmia neonatorum, and orthopædic schemes. The municipal and Poor-law beds in Glasgow, numbering some 5000, could be used to better advantage if they were under unified control. Again, the remedial measures for school-children which had reached a high level, should obviously be applied to pre-school children. The modern tendency to specialise and have separate clinics for tuberculosis, child welfare, venereal diseases, &c., all added to the complexity. Perhaps centres in whose work the general practitioner would take part would be the ultimate solution. The bringing in of the factory worker into a unified scheme was a difficulty. On the other hand, the

proposed new department for mental health was a mistake.

Prof. E. L. COLLIS (Cardiff) referred to the new Factory Bill and criticised the clause giving the Secretary of State power to transfer control of factories to county councils. The local health authorities could not deal with industrial health and diseases adequately. The factories must supply their own medical services (under supervision) and not have a medical service inflicted on them. He cited the growth of the factory medical service in the United States in support of his contentions.

Prof. F. E. WYNNE (Sheffield) was inclined to agree with Prof. Collis; he favoured the exclusion of factories and ports, but would include everything else under one local health administrative unit. The Commission of 1869 recommended one local and one central unit, but the Ministry had not accomplished the unification intended. School medical departments were still often separate in England. Infant and pre-school records were not passed on and school records were mainly pigeon-holed. There was much overlapping and waste. There should be one record, including the pre-school, school, and factory periods. With a unified medical service would come a better and more general training for the young medical officer.

Dr. J. H. MEIKLE (Edinburgh School Board) said the education and health services in Scotland were quite separate, though sometimes coördinated. The 1919 Memorandum of the Scottish Board of Education recognised the need for coöperation. In Edinburgh there was a happy alliance. Joint clinics had great advantages. He favoured coöperation rather than unification.

A communication from Prof. E. W. HOPE (Liverpool) was read, which referred to the many Government departments which dealt with public health and the "preposterous" proposal to have a separate department for port sanitary work. Dr. Hope went on to refer to the anomaly of the destitution authority dealing with vaccination, to the magnificent Poor-law hospitals, and to the many-sided administration of public health which had been built up in London. His ideal was one chief medical officer for each local health unit, including factories.

Dr. FREDERICK DITTMAR (Scottish Board of Health) regarded coördination as essential. Glasgow had Poor-law hospitals with staffs of consultants. The health authority should take over all treatment of disease. In Aberdeen the medical administration of the Poor-law hospitals had been taken over by the health authority; also the schools. In Stirlingshire the medical officer of health was the administrative head of all these services. Dr. Dittmar thought, however, that the industrial health problems of the factories were so distinctive that they should be dealt with by the factories themselves.

Dr. F. N. KAY MENZIES (London) described the apparent chaos of London's health government, which nevertheless produced good work. There was, however, much overlapping, unnecessary correspondence, friction, and variation in standards. Local conditions in the country varied very much, and the crux of the question was: What is to be the unit? For county boroughs the solution was easy. Each county, he thought, should prepare its unification scheme to suit local conditions and submit it to the Ministry.

Dr. W. F. DEARDEN (Manchester) put the point of view of a factory surgeon. He thought local health authorities should only deal with matters which made factories a nuisance to the surrounding community and that the factories should deal with their own industrial health problems. A committee of employers and employed with a Home Office representative discussed industrial dangers and drew up rules and regulations. No local authority could have on its service all the specialists needed for dealing with the various industries. The work of the certifying factory surgeons had changed and they now had to act as neutral officials in advising about regulations, and in investigating industrial poisoning effects and compensation cases.

Dr. MIDDLETON MARTIN (Gloucestershire) spoke in favour of central and local unification. The establishment of the Ministry of Health had not brought about any central unification. In Gloucestershire the medical officer of health was head and the pre-school records were passed on to the schools. Port sanitation was rather special, as regards unification proposals.

Dr. J. PARLANE KINLOCH (Aberdeen) said that in Aberdeen they were now considering the relation of the municipal and Poor-law hospitals (taken over by the municipality) to the voluntary hospitals and the university. He thought that there was nothing so special about factory medical inspection as to interfere with its being taken over by the local health authority. Orthopædic schemes, for example, were of a far more special nature. He believed, however, that sanitary inspectors needed a higher education to enable them to deal with the environmental hygiene of factories and that their association should take up this matter. The area of the local health unit needed to be sufficiently large.

Dr. DAVID MCKAIL (Glasgow) advocated the employment of part-time medical officers and thought it was essential that all medical officers should have at least three years of the rough-and-tumble of practice in order to get a true idea of home conditions.

Dr. HAROLD SCURFIELD (Folkestone) thought these talks did not advance matters much and that the various districts should make experiments in coöperation with the encouragement of the Ministry. He gave as examples the experiments that were being made in Gloucestershire, Essex, and Cardiff.

Dr. H. S. BEADLES (Romford) recommended the coöption of medical representatives on the health committees.

Dr. E. H. SNELL (Coventry) thought that just as one head was necessary for an army, one head was necessary for the local health unit.

Dr. W. A. LETHEM (Ministry of Health) recommended the Cardiff system as a means of providing a good all-round training for future medical officers of health.

Dr. MACGREGOR, in replying, said that the head clinical posts in each specialty should be better remunerated. He thought there was considerable scope for regional coöperation, approved Dr. Menzies's suggestion about county experiments in coöperation, emphasised the importance of continuity of records, and said that we wanted something more than interchange of information.

THURSDAY, JULY 21ST.

The subject under discussion at the second session was

THE NATION'S FOOD SUPPLY.

The Section was asked to consider the duties of the State in relation to the food supply, in so far as they were concerned with research, instruction of parents, maintenance of supplies, and cooking facilities.

Prof. EDWARD MELLANBY'S opening paper constituted a strong plea for the setting up by the Ministry of Health of a board of nutrition composed largely of experts actively engaged in nutritional research. This board would examine the results of research work conducted for the Medical Research Council, the Board of Agriculture, the Empire Marketing Board, and other bodies by study of the work and personal contact with the investigators; it would advise the Ministry about suitable lines of action, and it would initiate research on practical points to fill up gaps in our knowledge. The Ministry, acting on this board's recommendations, would control the feeding of public institutions and institutions in receipt of grants, publish authoritative statements for the guidance of the public, and set up a department for testing the value and vitamin-content of foods. As regards instruction of parents, the Ministry would see that all teaching organisations, including the press, had authoritative information supplied to them instead of the haphazard amateurish,

and often partisan, statements at present available. As regards maintenance of supplies, the Ministry would increase, for example, the facilities for obtaining desirable foods such as "the protective foods," and discourage the production or importation of less desirable foods, according to the needs of the moment. Fish, for example, was an excellent food, the consumption of which was being reduced at present by faulty methods of distribution and sale. The modern practice of buying cooked foods would necessitate attention to cooking facilities.

In leading up to his main proposal, Prof. Mellanby outlined the facts about the fundamental importance of correct feeding in the promotion of health and resistance to disease as shown by the research of the last few years. Knowledge of dietetics was now much ahead of its application, and the machinery for its dissemination was inadequate. He paid tribute to the Government departments and the Medical Research Council for the good work already done, but much more could be done by the better application of present knowledge. Research was carried out in water-tight departments and there was much overlapping; coördination was urgently needed. The Medical Research Council was hampered by lack of funds. The Empire Marketing Board would provide funds. More research workers were needed. Administrators had not time to keep in touch with the work and needed first-hand knowledge. The claims made by the manufacturers of various foods ought to be controlled. Sound advice from an authoritative source was urgently needed. The State should take a stronger line in promoting and coördinating research, in informing the public, and in controlling food supplies.

Dr. T. EUSTACE HILL (County Durham) considered Prof. Mellanby's address and proposals not a counsel of perfection but eminently reasonable, and he favoured the establishment of a board of nutrition. He thought the personal touch was needed to produce a change in dietetic habits. The health visitor had great opportunities in the home but required better training in the subject. Talks at the centres, too, were better than set lectures. The cheapening of foods and the improvement of facilities for distribution were urgent matters. In one district they had gluts of fish, fruit, and vegetables, which were allowed to rot and in another district, not far away, the same articles were sold at exorbitant prices. Allotments should be encouraged and the holders should be advised about the best vegetables to grow, from the point of view of food values. Coöperative societies might do much to facilitate transport of cheap protective foods. Communal kitchens would be a boon to poor industrial districts. The charges for cooked foods were much too high.

Dr. J. PARLANE KINLOCH took up the cudgels for the national cereal of Scotland and went on to show the inadequacy of our milk consumption. He gave a list of the milk consumed per head in various countries, which showed the United Kingdom at the bottom with a consumption only one-half that of the next lowest. For the immediate present the health visitors could do most to educate in the homes, but when the teachers were better educated in food questions, he hoped for greater results from the schools. He approved of communal laundries, which would give the housewife more time for cooking.

Dr. GERALD LEIGHTON (Scottish Board of Health) declared himself an optimist about the milk-supply and considered it unwise to legislate in advance of public opinion.

Sir GEORGE NEWMAN (Ministry of Health) gave a brief sketch of recent legislation to illustrate the great interest which the Government took in food questions. Diets were improving and the public was interested, as the many articles in the press showed. The knowledge of nutrition had not yet permeated the medical profession. When the doctors understood nutrition, the people would learn. Prof. Mellanby's proposition would receive his most careful consideration.

Dr. MACGREGOR referred to the diversity of opinion among doctors on food questions. He thought the recent experience with the unemployed in Glasgow had shown that the usually accepted minimum of calories needed was an overestimate. He also defended oatmeal as an article of diet.

Lack of time prevented a general discussion and, possibly owing to the wide scope of the title, Prof. Mellanby's main proposal—the establishment of a board of nutrition—received scant consideration.

Pulmonary Asbestosis.

This new disease was discussed by Dr. W. E. COOKE (Wigan), Sir THOMAS OLIVER, and Prof. STUART MCDONALD (Newcastle-on-Tyne) from the clinical, pathological, and preventive points of view.

Sir THOMAS OLIVER showed that the crushing of the rock, which may contain 50 to 60 per cent. of silica, was done in the country (e.g., Canada) where it was mined or quarried. British workers were therefore less exposed to the harmful influence of the dust. Dr. Cooke had shown in 1924 that in the manufacture of cloth-like structures from asbestos dust was produced, especially in the carding department. A fatal case of asbestosis had been described by Dr. Montague Murray in 1900 in the *Charing Cross Hospital Gazette*. He (Sir Thomas Oliver) had seen cases in Leeds and had visited asbestos factories in America. Asbestos manufacture had been carried on in this country for 30 years and was largely a familial occupation. The rooms in which carding and spinning were done must be well ventilated and kept clear of dust and floating fibre. In a British factory the dustiest process was the hand-beating of the finished mattresses used for covering and protecting the internal machinery of automobiles, and during this process the men should wear masks and there should be open windows at one end and a strong down-draught at the other end of the shed used, which should be separate from the rest of the factory.

Asbestosis resembled silicosis in producing marked shortness of breath, deficient respiratory capacity, and physical debility, followed only at a late stage by the addition of tuberculous infection. He did not doubt that there had already been several deaths in British factories from asbestosis which had been unrecognised and certified as pulmonary tuberculosis. He described the histories of two women (one, 48 years old, who had worked 30 years, the other, 39 years old, who had worked 18 years), neither of whom had tubercle bacilli in their sputum. Both gave up work on account of loss of weight, increasing debility, shortness of breath, and cough. Asbestos would be put to many uses. It was indestructible by fire or acids, and was used for making tiles, ceilings, and cord. The industry would grow and preventive measures must be adopted at once.

Prof. MCDONALD then described the curious foreign bodies found in the lungs post mortem, in addition to the fibres and particles of silica. They resembled minute crustaceans, but investigation appeared to indicate they were neither animal nor vegetable and they might be silica in a colloidal form, from the hydrolysis of the asbestos fibres owing to long-continued retention in a moist, warm situation.

SECTION OF FORENSIC MEDICINE.

THURSDAY, JULY 21ST.

Prof. HARVEY LITTLEJOHN was to have presided over the sessions of this Section, but was prevented from doing so by the illness which led to his death on August 16th. At the first session the chair was taken by Earl RUSSELL and the subject of discussion was

ALCOHOL AND THE MOTORIST.

Dr. GODFREY CARTER (Sheffield) said that Dr. H. W. Southgate and himself had found that alcohol could be detected in the urine in quantities varying with the amount taken and the time that had since

elapsed.[1] Later, E. Mellanby and H. W. Southgate had established a ratio between the alcohol in the blood and in the urine. It had been found that this ratio stood at the figures 1 to 1·34, showing that the renal epithelium had a selective action for alcohol in secretion. A concentration of 300 c.mm. per 100 c.cm. of urine, at the point of maximal concentration, suggested definite intoxication. When a sample of urine had been obtained it should be quickly bottled to prevent alcoholic evaporation, and glycosuria must be excluded in order to prove that no alcoholic fermentation had taken place.

Dr. EMIL BOGEN (California, U.S.A.) described a method of determining the concentration of alcohol in the breath. The patient was asked to blow up a football having a capacity of about two litres. The air while still warm was bubbled at a moderate rate through 5 c.cm. of a hot solution of 33 per cent. N/15 potassium dichromate in 50 per cent. sulphuric acid. The colour changed from reddish yellow to greenish blue, and was then compared with a series of standards previously made up by the addition of known amounts of alcohol (1, 2, 3, 4, and 5 mg.). The entire test took only two to five minutes. This method, together with examination of the urine, had been used in an investigation at the Cincinnati General Hospital of 500 persons suspected of drunkenness. This investigation had well shown the relationship of the concentration of alcohol in the urine to the degree of intoxication. None of the patients with less than 1 mg. of alcohol per c.cm. of urine had been reported as intoxicated, whilst a little more than half of those having from 1 to 2 mg. per c.cm. were so diagnosed clinically. Three-quarters of those having from 2 to 4 mg., and all of those having 4 mg. or more per c.cm. of urine, had been regarded as drunk. The diagnoses had been very conservative since in these cases the physician was called into court to sustain his impressions, and unmistakable clinical evidence was insisted upon. Even more striking was the relationship between the concentration of alcohol in the urine and the different symptoms usually considered indicative of acute alcoholism. The odour of alcohol in the breath was present in less than half of those showing under 1 mg. per c.cm. of urine, in more than three-quarters of those showing from 1 to 3 mg., and in nearly every instance where the urine contained 3 mg. or more of alcohol per c.cm. On the other hand, the dilated pupils and flushed face, so frequently relied upon as evidence, were found in less than one-third of the cases and were particularly noticed in the moderate groups, being replaced by constricted pupils and pallor in a high proportion of patients admitted in coma or stupor. Inability to stand straight without swaying was noted in less than 20 per cent. of patients showing under 2 mg. of alcohol in the urine, but in more than 80 per cent. of the others who were able to stand at all. In no case with 3 mg. or more was the subject able to stand without swaying. Marked incoördination of the hands was most frequently found in those who had more than 2 mg. per c.cm. Disturbance of behaviour, on the other hand, including garrulousness, volubility, euphoria, boisterousness or pugnacity, were more pronounced in those showing from 2 to 4 mg., for above that they tended to lapse into sluggishness, stupor, or coma.

The estimation of alcohol in the breath, said Dr. Bogen, was the quickest and easiest test yet suggested. As soon as the disturbing factor of the alcoholic liquor still in the mouth and lip was removed (about ten minutes) the concentration of alcohol in the breath approached a fairly constant relationship to that in the blood, since alcohol passed through the lungs very easily. Under 15 per cent. of patients having less than 1 mg. of alcohol in the sample of breath taken were found to be intoxicated, as compared with 70 per cent. of those having from 1 to 3 mg. and 100 per cent. of those having 3 mg. or more. The study of these results and those of other observers indicated that estimation of alcoholic concentration in the urine, breath, and tissues, was the most important single factor in arriving at a correct conclusion as to the degree of a patient's intoxication.

Prof. J. T. J. MORRISON (Birmingham) thought that the actual tests of urine and breath would not be used generally, because it was difficult to get satisfactory specimens and prompt analysis. The fact that renal conditions and disease in general might affect these excretions was not to be overlooked, and the wishes of the accused person had to be considered before the tests were made. The effects arising from the consumption of the same quantity and concentration of alcohol in different persons and also in the same person might vary greatly—e.g., with the amount of food in the stomach and the dilution and the rate of consumption of the alcohol. Many systems of the body were affected by drink, and there was no single effect that might not be present in trauma or disease. The crucial point was, he thought, how much disturbance there was, and no single test would suffice. All possible signs and symptoms must be taken into account.

Prof. ANDREW ALLISON (Glasgow) said that the object of a medical witness was not to give his own impression of a drunken man, but to present to the court a picture of the case as a whole when first seen. The object of the judge was to ascertain as to whether the defendant's efficiency had been so diminished as to render him culpable. Dilated pupils and infused conjunctivæ were inadequate tests for drunkenness. If a prisoner denied drunkenness he should be put in a cell; if he fell asleep within a quarter of an hour he was probably drunk and not suffering from nervousness or shock. Prof. Allison insisted on the necessity of gaining the prisoner's assent before examination, otherwise he might give evidence against himself. In cases of homicide the accused must be warned and the object of such examinations must be explained to him. Also it was wise to consult an independent doctor.

Lord RUSSELL said that if a man was in custody he might be examined without necessarily being warned. The accused should always have the option of calling in his own doctor.

Prof. J. E. W. MACFALL (Liverpool) emphasised the necessity for a lengthy exhaustive examination in every case of suspected drunkenness and for concrete facts rather than ideas. It was important to ascertain when the prisoner thought he had been arrested—i.e., to get his idea of the interval between the time of his arrest and the time of the present examination. It was important that the tests should bear a relation to the actual work which the accused was carrying on at the time. The doctor might drive in a car, for instance, with the drunken man.

In the course of his reply Dr. CARTER said that a man was not fit to be in charge of a car if there were more than 260 mg. of alcohol in 100 c.cm of his urine.

At the second session of the Section Sir WALTER SCHRÖDER (London) took the chair, and the subject of discussion was

The Teaching of Forensic Medicine.

Prof. JOHN GLAISTER (Edinburgh) said that there was a great difference in value between the lectures given by a teacher in constant and immediate touch with the practical side of the subject and the lectures of one whose knowledge was chiefly theoretical. The teacher's field of work should provide material for instruction, such as photographs of cases, whilst the formation of a class museum of illustrative specimens was a valuable adjunct. The visit of a student to a Court of Law during a trial was worth much, as it enabled him to see the surroundings and to hear witnesses examined and cross-examined. Such opportunities commonly occurred during the progress of a teaching term and the courts were willing to give students facilities for being present.

Prof. MACFALL agreed that the teaching of forensic medicine must be correlated with actual cases. The

[1] Brit. Med. Jour., 1926, i., 463; see THE LANCET, 1926, i., 207.

teacher ought to have the confidence of the local coroner and for his expert knowledge to be available at any time. It was difficult to see at what period of the student's career examinations in forensic medicine should take place. A good knowledge of medicine was necessary as a basis, and therefore probably the best time was either just before or after the final examination.

Prof. SYDNEY SMITH (Cairo) said that in forensic medicine the training of the student was less important than the training of the medical practitioner. It was necessary to have a definite course in the subject analogous to that for the Diploma in Public Health. Such work must be done regularly, and therefore it was better to have centres set aside for the work, equipped with the necessary laboratory material. In Egypt every case of violence and the like required complete investigation. In this country this investigation was not done, often because of the question of fees. If there were centres employing full-time staffs this would not arise in the same way. In Egypt every doctor carried a sterile bottle and in cases of poisoning specimens were immediately sent to the laboratories. This system had greatly reduced expenditure.

Prof. ALLISON thought it desirable to have teaching centres well equipped, and if possible to send all cases of poisoning, for instance, to such institutions. There should be more opportunities for discussing the subject, such as those offered by the Medico-Legal Society in London. No such society existed at present in Scotland.

Dr. J. A. KERR (Edinburgh) said that just as a diploma was required for service in the public health department, so there ought to be a similar qualification distinguishing experts in forensic medicine.

Prof. MORRISON pointed out that coroners were handicapped by the town councils in their efforts to emancipate the teaching of forensic medicine. In fatal cases of irritant and corrosive poisons the general practitioner sent quite inadequate specimens of the organs and fluids to be examined. It was deplorable that the teaching of this subject should have been pushed so far into the background, but unless more interest and sympathy was taken by the authorities it was impossible to progress.

Dr. HICKS said that there was no definite procedure laid down as to the proper course to take in poison cases. Any practitioner might be in a position which required such knowledge. He had had painful experience of the difficulties and delay in getting specimens examined and of the decisions as to procedure in these medico-legal cases.

Lord RUSSELL was glad that the general opinion was that much of this work should be post-graduate. The medical curriculum was already overloaded.

Sir WALTER SCHRÖDER thought that something more should be done to bring about a system of forensic medicine which could be brought to bear on general practitioners, and especially those who had to give medical evidence; therefore it was necessary for the teaching to be real and practical. It seemed apparent that forensic medicine should be in part a post-graduate study, but exactly when the instruction should be given, and who should give it, was a problem yet to be solved. He had supported the suggestion that there should be a central post-mortem mortuary in London and the principle involved ought to be extended to the teaching of forensic medicine generally. The question as to who should be entitled to make post-mortem examinations raised difficulties, but the appropriation of the work to a police divisional surgeon might be the best solution, though it would be necessary for him to be in close touch with pathological work. It was a matter for the British Medical Association to decide whether a post-graduate course in forensic medicine should be introduced with a special diploma as a necessary qualification of a police surgeon.

Reviews and Notices of Books.

COMPARATIVE PHYSIOLOGY OF THE HEART.

By A. J. CLARK, *M.C.*, M.D., Professor of Materia Medica in the University of Edinburgh. Cambridge University Press. 1927. Pp. 157. 8*s.* 6*d.*

IN this the first of the series of Cambridge Monographs on Comparative Physiology to be edited by Prof. Joseph Barcroft and Mr. J. T. Saunders, Prof. A. J. Clark has provided a synopsis of the work of different investigators, which will earn for him the gratitude of many who cannot strictly claim the right to call themselves physiologists.

The opening chapters are devoted to the invertebrate heart and to the consideration of certain physiological properties of cardiac muscle both in cold and in warm-blooded vertebrates. They form a summary of the present state of our knowledge, and are necessarily less absorbing than those later chapters in which the author deals in a more discursive manner with general problems, such as the relation of body-weight to heart-weight, to circulation volume, and to the work of the heart in birds and mammals. He shows that the heart-rate in different species tends to vary with the metabolic rate, and since in the larger animals metabolism is much slower than in the smaller ones, the demand of the tissues for oxygen can be met by a slower heart-rate. Prof. Clark points out, however, that this is only true within certain limits; 1000 and 40 beats per minute appear to be the extremes beyond which it is uneconomical to go. Consequently the largest living mammal, the elephant, has to be content with a heart-rate which is no slower than that of its less bulky contemporaries. Considering the valuable services which the tortoise has rendered to cardiac physiology, it seems almost a pity that in the present version of the story the hare should be set to race the rabbit instead of his traditional opponent. The heart-weight in the hare is three times, and the resting pulse-rate is one-third of that in the rabbit. In case of emergency the maximal rates attainable in the two animals are similar; the reserve of the hare therefore compares very favourably with that of his lower-powered connexion.

As a book of reference this will be of real value to those who wish to study more deeply the many fascinating aspects of the subject on which Prof. Clark touches, and there can be no doubt that the author will succeed in his object of stimulating research in comparative physiology.

PYELOSCOPY.

La Pyeloscopie. By F. LEGUEU, Professor of the Urological Clinic and Surgeon to the Necker Hospital, Member of the Académie de Médecine; BERNARD FEY, Head of the Urological Clinic of the Faculté de Médecine; and PIERRE TRUCHOT, Head of the Radiological Department of the Clinic at the Necker Hospital. Paris: Norbert Maloine. 1927. Pp. 114.

Prof. Legueu and his collaborators are to be congratulated in having achieved a fresh advance in the methods of urological diagnosis. These workers, feeling that pyelography was not the last word in the radiological examination of the hollow part of the urinary tract, set themselves to improve upon it, and, during the past four years, they have performed what they term pyeloscopy in a thousand cases at the Necker Hospital. Pyeloscopy, as they define it, is pyelography performed by direct vision with the aid of the X ray screen, and is superior to a simple pyelogram in the same way as screening of the stomach after a barium feed is superior to mere photography on a single plate. It demonstrates the motility and tone of the organs as well as their outline, and brings our knowledge of the working of the excretory apparatus of the kidneys into line with

that of the other hollow organs of the body. The outcome is the book under review.

After a chapter on technique, in which the authors claim that the investigation should be a painless one, they proceed to give a full account of their observations of the normal renal pelvis when filled with a suitable opaque solution. Their description of its behaviour, the method of evacuation, and the action of its sphincters makes fascinating reading, and is freely illustrated by plates taken at different moments during the course of the examination. This is followed by a study of the modifications induced by infective and other pathological changes which may cause delay, hyperactivity, partial or complete retention, or retention with spasm. Finally, the experience thus gained has been brought to bear on a series of cases of well-defined diseases, and with profit. In certain of the conditions examined the writers admit that pyeloscopy has not helped them, but in others, notably early hydronephrosis, movable kidney and the primarily infective lesions, it has proved most valuable in showing just where the fault lay and thereby indicating the most hopeful line of treatment.

This is good work and the account of it is well given. If any criticism of the book can be made it is that the translations of notes in several languages accompanying the plates do not come up to the standard of the rest of the production.

BLOOD CHEMISTRY.

The Clinical Interpretation of Blood Chemistry. By ROBERT A. KILDUFFE, M.D., Director of Laboratories, Atlantic City Hospital. Philadelphia: Lea and Ferbiger. 1927. Pp. 186. $2.50.

THIS little book sets out to aid the practitioner by telling him what he can and cannot deduce from various chemical analyses of the blood. The aim is admirable, and many of the sections well done. Those dealing with nitrogenous constituents are especially good; blood-sugar is also fully dismissed, special sections being devoted to the interpretation of glucose tolerance tests. Chapter XII., on blood chlorides, seems either too brief or too long. The truth is that nothing definite can be learnt from figures about chlorides at present, and it would have been wise to tell the reader so frankly. The chapters dealing with dietetic management of metabolic conditions in the treatment of diabetes appear irrelevant, especially when the book omits all reference to such important and relevant subjects as the significance of bilirubin and its derivatives in the blood. There are, however, few serious omissions, and as an introduction to a subject of growing importance to practitioners the book has real merit.

THE GALL-BLADDER.

La Vésicule Biliaire. By M. CHIRAY, Professor agrégé à la Faculté de Médecine de Paris; and I. PAVEL, Assistant Universitaire à la Faculté de Médecine de Bucarest. Paris: Masson et Cie. 1927. Pp. 568. Fr. 70.

THIS volume has the character of those classical works which have made French medical literature famous. Clearly and logically written, it deals with its subject matter in exhaustive, but never tiresome fashion. It is up to date and well documented, each chapter being supplied with a selected bibliography, and we note with pleasure that this list of references is, broadly, international, and thus is free from one of the grave faults of many modern works published in Paris. Cholecystography is fully described, and a series of good reproductions illustrate the radiographic appearances of the diseased gall-bladder. The main criticism to be made of an otherwise excellent volume is that the authors appear to consider "non-surgical drainage" as the one alternative to operative treatment. They advocate this method even in addition to surgery, a prospect which to many will appear superfluous and alarming.

ALLERGY AND ANAPHYLAXIS.

Allergy, Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction. Second edition. By WILLIAM W. DUKE, Ph.B., M.D., Kansas City, Missouri. London: Henry Kimpton. 1927. Pp. 344. 25*s*.

THERE is in this book an excellent account of the theory of allergy and experimental anaphylaxis, which is dealt with on historical lines. The author disclaims any first-hand knowledge of this part of the subject; but he has made a really useful compilation. He gives a full description of plants that produce pollen, with pictures of those particularly found round Kansas, Missouri, and microphotographs of the various pollens. Other causes of allergy are considered, and also the causes contributory to the reaction. Among these is to be noted the statement that "many asthma cases and many patients with nasal reaction have been made infinitely worse by radical, and even by minor operations in the nose, even operations carried out intelligently by the most careful surgeons." The symptoms of allergy are very fully dealt with. The author describes some convincing cases which show that Ménière's disease, renal colic, and arthritis are occasionally due to allergy. Striking pictures of the various cutaneous reactions are included, and the methods of carrying out the cutaneous and intracutaneous methods of testing are clearly set out. It would have been useful to readers if the process of preparing extracts from various substances, such as dust, had been described; but full references are given. To this second edition the author has added a description of the local passive transfer of hypersensitiveness, and of local desensitisation by treatment of local sensitised areas with the related irritating agent. Unfortunately the description of these complex methods is too brief to be really intelligible. The treatment by ephedrine is also described.

In Part II. a much needed summary of the reactions caused specifically by reagents such as heat, light, cold, and chemical irritants is given. There is an excellent bibliography. The author describes vesicles on the skin produced by protein testing as "hives." It would be advisable in a future edition to add a definition of this uncommon expression.

CAUSE AND CURE OF SPEECH DISORDERS.

By JAMES SONNETT GREENE, M.D., Director, and EMILIE J. WELLS, B.A., Supervisor, of the New York National Hospital for Speech Disorders. New York: The Macmillan Company. 1927. Pp. 458. 20*s*.

THIS book is divided into three main parts dealing respectively with stuttering, stammering, and vocal defects. A variety of subjects are included in the last section, such as intensity, pitch, and intonation, and the attention given to pronunciation should be useful to many people who do not suffer from speech-defects as ordinarily understood. A sympathetic account of the emotional make-up of the stutterer takes up a large part of the book, but little is said about the details of his treatment. The section on stammering is less satisfactory; indeed, the authors do not succeed in giving a clear definition of what they include in this term. They appear to mean any defective enunciation due to physical causes, and they give a list of such causes which includes idiocy, progressive muscular atrophy, bulbar paralysis, Bell's palsy, insanity, cleft palate, and acquired malformations of the mouth, teeth, and larynx. It is, of course, impossible to formulate methods of treatment for speech-defects due to many of these diseases, and in some treatment of the speech would be impossible or undesirable. It would have been better if details had been given as to how the admirable series of exercises described should be applied to special forms of defect, such as cleft palate after operation.

IMMUNITY IN INVERTEBRATES.

L'infection microbienne et l'immunité chez la mite des abeilles Galleria mellonella. By S. MÉTALNIKOV. Paris: Masson et Cie. 1927. With 22 text figures. Pp. 140. Fr.18.

Galleria is a moth whose larva feeds on the wax of the comb in bees' nests; it can be easily reared in the laboratory and evidently forms a convenient object for a variety of experiments in a field which so greatly needs further inquiry—immunity in invertebrates. M. Métalnikov describes some interesting observations on the peculiar nutrition of the animal, but more notice will probably be taken of his experiments on infection and resistance. The animal is highly susceptible to some bacteria (e.g., *B. coli* and *B. pyocyaneus*), moderately susceptible to others (e.g., typhoid, staphylococci), and immune to a number of human pathogens (e.g., tubercle, diphtheria, tetanus). It can be protected by killed vaccines. Immunity, as we know it, is mainly a late evolutionary development in warm-blooded animals, especially in respect of the antigen-antibody reaction. In lower organisms mass immunity by selection of resistant races, and individual immunity by phagocytosis, are more prominent. And it is of the greatest interest to work out the beginnings of the phenomena which we see in mammals and birds: similar work on other lower animals is much needed if any real science of comparative pathology is to be achieved.

SOME FAMOUS MEDICAL TRIALS.

By LEONARD A. PARRY, M.D., F.R.C.S. London: J. and A. Churchill. 1927. Pp. 326. 10*s.* 6*d.*

IF all the crimes in which medical men have been implicated were to be recorded, we fear that a library rather than a volume would be required. At any rate, this would be so if all ages and all countries were drawn upon for the purpose. In the volume before us Dr. Parry has not confined himself to our epoch or to any one country, but has made wise selections from international records. He has compiled an interesting book, in which will be found murders, with doctors as villains and as victims, trials of physicians and surgeons for treason, theft and forgery, and stories of quackery ending in the law courts. Dr. Parry writes well, and spares us the tiresome details which rob so many modern records of all interest.

HANDBOOK OF SKIN AND VENEREAL DISEASES.

Praktikum der Haut- und Geschlechtskrankheiten. Fifth edition. By Dr. MORITZ OPPENHEIM, Professor of Dermatology and Syphilis in the University, Vienna. Leipzig and Vienna: F. Deuticke. 1927. With 55 illustrations. Pp. 284. M.12.

THE rapid progress of our knowledge in the branches of medicine with which this handbook deals has necessitated the appearance of a fifth edition after only three years. This is the modest remark of the author, who in his latest preface instances particularly the new fields opened up by helio- and radio-therapy, the advances in the diagnosis of tuberculous skin affections, and the modern developments in connexion with the examination of the cerebro-spinal fluid in all stages of syphilis. He admits the desirability of an ætiological classification, but thinks the time is not yet ripe for the purpose. The book therefore retains its original arrangement, and departs but little from the classical tenets of the Hebra school. It makes no appeal on the score of its illustrations, which are limited to half-tone reproductions of typical microscopic sections, and woodcuts of apparatus used in the treatment of gonorrhœa. The inclusion of this large subject in the 284 pages of text has resulted in a curtailment of all the dermatological descriptions, and it seems unlikely that without a thorough clinical training either the student or the practitioner could derive much profit from a study of the contents. We imagine that Prof. Oppenheim had his own well-instructed students in mind when he wrote the book, and of these there must be many both on the continent and in this country who have a lively recollection of his vivid demonstrations and lectures. To such and other graduates in the Hebra school this work is confidently recommended. The descriptions are accurate and concise, while the therapeutic sections are entirely up to date and reliable. These points are particularly well brought out in the treatment of syphilis, though it is doubtful if all authorities would agree that bismuth is more toxic than mercury.

SUNSHINE AND HEALTH.

By RONALD CAMPBELL MACFIE, M.A., M.B., C.M., LL.D. London: Williams and Norgate, Ltd. 1927. Pp. 256. 2*s.*

IN this little book there is really not much about sunshine in its relation to health. What there is strikes us as being so good that we regret that the author should have taken up nearly two-thirds of the book with a popularly written account of the physics of radiation, combined with dissertations of a highly speculative nature upon the why and wherefore of this universe. On p. 62, for example, he says: "Let us turn for a moment to the philosophy and religion of radiation," which subject is hardly relevant to a discussion of the effects of sunlight upon health. Dr. MacFie's wide reading, of which his book supplies ample evidence, should have prevented him from referring to the electron as flashing along at the rate of 1,000,000 miles a second, but mistakes of this sort are very few. We hope that the balance of the subject will be restored in a future edition.

EXAMINATION OF CHILDREN.

Clinical and Laboratory Methods. Second edition. By ABRAHAM LEVINSON, M.D., Northwestern University, Chicago. London: Henry Kimpton. 1927. Pp. 192. 15*s.*

THE first edition of this book was founded on a course of lectures, delivered by Dr. Levinson to students at Chicago University, on the interpretation of clinical and laboratory tests in pediatric practice. The success of the former edition has led to the preparation of a second, in which various additions have been made to the account of physical examination and the descriptions of laboratory tests. Among the latter are included many which have no special application to pediatrics, as, for instance, Lange's gold test. The text is accompanied by numerous illustrations both of physical abnormalities and of apparatus, and the book fulfils its objects.

DEVELOPMENT OF THE HUMAN FŒTUS.

Die Entwicklung des Menschen vor der Geburt. By Prof. Dr. Med. IVAR BROMAN, of Lund University. Munchen: J. F. Bergmann. 1927. Pp. 357. M. 24.

THIS book, by the well-known director of the Anatomical Institute at Lund, is in large part a record of his own work in the domain of human embryology. It is thus an authoritative guide for those who wish to make acquaintance with the subject, although in one brief volume only short accounts of each system can be given. It is an excellent descriptive presentment of what one may term the accepted German academic views. These differ in certain particulars from those perhaps generally held in England, but the differences are not very important. The text has not escaped from those errors which seem to persist in embryological works, more especially in the figures. For instance, the illustrations in the section dealing with development of the heart in this book are borrowed. The inaccuracies of the figures of G. Born are reproduced, although their more manifest absurdities have been remedied by omission of the labels. A most misleading figure from Kollmann follows: leaving on one side the obviously ridiculous

description (correctly copied from the hand atlas) of the parent specimen as one of 7·5 mm., the conditions shown in the drawing are so erroneous in many small details that it cannot fail to give a false notion to the reader who has no practical acquaintance with the subject. The figures in this section do not exemplify the text, which is correct, if brief. It is to be regretted that these few illustrations mar the series, for most of the figures in this book are excellent, and often beautiful. Moreover, many conditions are illustrated which are not, we believe, so treated in any English text-book. The descriptive portion of the work is concise, clear, and good, and the whole production leaves a very pleasant impression upon the reader.

LES MICROBES.

By P. G. CHARPENTIER, Professeur à l'École de Médecine de Dijon, Directeur de l'Institut d'Hygiène et de Bactériologie. Paris: Les Editions Rieder. 1927. Pp. 77. Fr.16.50.

IT is, we think, a fact that the French lay public are on the whole better informed on medical matters and human physiology than our own. They are more given to the social discussion of such subjects, they learn more in their education at institutions, and they do not regard conversation about their "in'ards" as carrying a vague suggestion of indecency. Here we have a popular but thoroughly scientific account of bacteriology, directed towards satisfying the layman's natural curiosity. It is a pleasant book to read, agreeably written, and the numerous heliotype illustrations, from photographs of M. Pierre Jeantet of the Pasteur Institute, are amongst the best examples of microphotography and its reproduction which we have ever seen.

JOURNALS.

ST. BARTHOLOMEW'S HOSPITAL REPORTS. Vol. LX. London: John Murray. 1927. Pp. 203. 21*s*.—The sixtieth volume of the St. Bartholomew's Hospital Reports is chiefly remarkable for the comprehensive account which it gives of the work being carried out by different members of the staff on the uses of deep X rays and radium. This account is of the nature of a symposium, seven workers summarising the results obtained in their own particular branch of the research. Sir Thomas Horder contributes an introduction, in which he states that he "knows no instance of a single centre producing in so short a time a mass of work of equal value to this." In the first article Dr. Walter M. Levitt traces the history of deep X ray therapy and shows how it has progressed from empiricism towards becoming an exact process founded on scientific data. He does not describe the results which he has actually obtained, but it may be inferred that they give grounds for satisfaction. Dr. Hopwood, professor of physics at the hospital, gives a compressed but excellent account of the physical properties of radium. Pure laboratory investigation is represented by Dr. R. G. Canti, who has worked for some years, in conjunction with the late T. S. P. Strangeways, at the effect of radium upon living tissue cultures. The object of the work has been to discover "the most efficient way of bringing about a lethal action in malignant growths." The problem is one of great technical difficulty, and no final results can be recorded, but it is evident that Dr. Canti has advanced some way.

Dr. N. S. Finzi introduces the clinical side of the work with an account of the therapeutic uses of the γ rays of radium, including their observed effects on the different tissues of the body, both normal and abnormal. In his account of the results of treatment hitherto obtained he tries to show that the time has arrived when the practice of treating only inoperable cases of carcinomatous growths should give way to the inclusion of many operable growths. This attitude may be scrutinised in the light of the next three articles by Mr. Geoffrey Keynes, Mr. Malcolm Donaldson, and Mr. Douglas Harmer on the treatment respectively of carcinoma of the breast, cervix, and larynx and tongue. Mr. Keynes describes the results which he had obtained up to the end of the year 1926. Although his statements are guarded, it is clear that a very remarkable degree of success has been obtained. In 9 patients out of 13 with primary carcinoma of the breast the results have been "uniformly good," and the treatment has already been extended to patients with operable growths. Mr. Donaldson has treated carcinoma of the cervix in a much larger number of patients. He claims that radium therapy, as a palliative treatment for inoperable growths, has far greater value than any other method yet devised. Of 20 patients with operable growths, 18 are still alive up to 33 months after treatment. Further time must elapse before results can be assessed. Mr. Harmer opens his article with the statement that the time has arrived when the medical profession must "reconsider the whole question of radium treatment of malignant growths in the upper air passages." His results show that intrinsic carcinoma of the larynx is very susceptible to radium, and that in carcinoma of the tongue also a high percentage of cures can be obtained. They certainly give support to Dr. Finzi's contention as to the treatment of operable growths, and to Sir Thomas Horder's claim that every individual case of carcinoma in these situations should be considered as potential for radio-active treatment *from the first*.

It will be seen that all these clinical articles are interim reports, but they hold great promise for the future. The reports appear to be intended only for those old students of the hospital whose names appear in the list of subscribers. We wish that this volume could have a wide circulation, which its cost (a guinea for a slim volume with few illustrations) may prevent.

New Inventions.

IMPROVED BOZEMANN'S UTERINE FORCEPS.

THIS is a very convenient instrument for packing, or for making applications to the uterus, cervix, or vagina, or for introducing a drainage-tube. The improved forceps have the usual double curve and single catch rack, but the blades are rounded at the end, longer and slightly tapering from the joint, and cross serrated inside for 1 inch from the tip. The handles are longer than those in general use, the

entire instrument is stouter and stronger in construction, and as it is made from stainless steel it is easy to cleanse and sterilise, and is very durable. The round end, which is the size of a No. 5 uterine dilator, greatly minimises risk of perforating the uterus or vagina; the taper admits of its use to some extent as a dilator; its cross serrations provide a ready grip for introducing or removing packing or drainage-tubing, or for holding a pledget of wool when making an application; the greater length facilitates packing a large uterus, and allows the hand to be kept out of the way; the stoutness of the forceps permits twisting when swabbing, painting, or cleansing the cervix. The instrument is useful in conjunction with a Sims's or bivalve speculum, a vulsellum, a gauze roll or ribbon impregnated or not as required, when hæmorrhage calls for quick and firm packing, also for painting or packing the uterus after curetting.

Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W., are the manufacturers.

J. LYLE CAMERON, M.D. Manitoba,
F.R.C.S. Eng., F.A.C.S.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 24, 1927.

CHANGE OF DOCTOR IN INSURANCE PRACTICE.

THE principle of free choice of doctor is so well accepted in this country that it is regarded as one of the fundamental bases of medical practice, and no doubt it has been a large factor in producing that happy and confidential relation between doctor and patient which is the envy of our continental friends and the despair of those who would introduce a statutory medical service. Nowhere than in the insurance scheme is the principle more firmly established or its carrying out more simple. Persons entitled to medical benefit in England and Wales, amounting to rather more than one-third of the total population, have 14,432 insurance practitioners to choose from. The number who contract out of the scheme to make their own arrangements is trifling, the number of complaints as to the service rendered is a small and diminishing quantity from year to year, and, as the Chief Medical Officer of the Ministry of Health noted in his recent report, the relation is such that the insured person is learning to consult his medical adviser earlier than was formerly the case, owing to the spread of the knowledge of preventive medicine. But free choice has its shady side in insurance practice; and especially during periods of unemployment due to industrial disputes a rigid adherence to the principle may be used by a disgruntled insured person to bring undue pressure upon the practitioner to obtain for him relief to which he is not entitled in equity or by statute. In industrial areas it is well known that the insured person can and does exercise pressure by threatening to transfer, and it has been stated on good authority that for a practitioner to give a certificate of fitness for work is, in some of these districts, a certain prelude to the receipt of notice that the insured person has removed his name from the practitioner's list. There is in such areas a plentiful supply of doctors to select from, competition is keen, and a new man coming in is tempted to go easy with his patients in order to secure their patronage and to build up a list at the expense of his colleagues. It had long been foreseen that some change in procedure was desirable, and certain alterations are to come into force on Oct. 1st. These new regulations are summarised in a notice circulated by the Ministry of Health to clerks of Insurance Committees, which is printed on page 678.

From a study of these regulations it is at once evident that the right of the insured person to choose another practitioner, even when he is already on the list of a doctor practising in his neighbourhood, is not seriously affected, but the procedure for effecting a change is not quite so simple under the new regulations as it was under the old. Formerly the insured person could change his doctor by taking his card across the road to the new doctor and securing his signature to Part B of the card; the acceptance took effect immediately and the insured person could obtain treatment at once. Evidence of the abuse of this right, and of its use in some cases as a lever to extract from the practitioner concessions, such as prescriptions and certificates, is cumulative. At a recent conference of a large friendly society a letter from a doctor's wife was read setting out how her husband was losing his patients by transfer because of his strict supervision of them, and his refusal to keep insured persons on sick benefit after he considered them fit for work. The delegate who read this letter urged the society to suggest some change in the regulations, whereby it should be made difficult for an insured person to effect immediate transfer. Early this year the Insurance Acts Committee of the British Medical Association suggested to the Ministry of Health that the insured person should be required to give at least two weeks' notice to the Insurance Committee of intention to change his doctor, the proposal being justified by the belief that the interposition of a formal check such as this would give the insured person, who may be annoyed because he has been refused a certificate on which he may claim sickness benefit, time to reflect. Thus the new regulations would appear to be the outcome of a demand from two of the principal parties to the insurance scheme—the practitioner on the one hand, and the approved societies on the other. Transfer by consent is not affected, but the insured person cannot in a fit of irritation threaten his doctor that he will go to a more amenable practitioner and secure the certificate to which he thinks he is entitled and which has been refused him.

There will be a wide feeling that the new regulations will help in maintaining the discipline and control which the doctor must necessarily exercise over his patient if his treatment is to be effectual. They should provide an effective check on the unreasonable demands of insured persons, for there is little doubt that many of these are under a mistaken notion as to what they are entitled to under the Insurance Acts. One of the evil effects of social insurance has undoubtedly been to create a feeling that the persons insured are entitled to secure benefits whenever they are so minded. The principle of insurance is not well understood by a large majority of the insured. Further, the competition amongst medical practitioners being what it is, and the difficulty of building up a panel practice being on the increase, it is by no means easy for the practitioner to withstand pressure of this kind. The new regulations should strengthen the hands of insurance practitioners as a whole, and help to restore them to their rightful position. It will be interesting to note what effect they have on the amount of claims for sickness benefit, for it was largely owing to the anxiety of the approved societies on this head that they were drafted. The actual working of the new scheme should not present difficulty. The insured person, on deciding to exercise his right to transfer to another practitioner, is required to obtain an authorisation from the Insurance Committee. This he does by sending his medical card to the Committee with a letter stating his intention to transfer. The medical card will be returned to him with a slip attached authorising the transfer to take effect 14 days after the date of application. This interval enables the first practitioner to continue treatment and prevents the second practitioner from taking over the case immediately except with the consent of the former. The most useful purpose to be served by the interval is, no doubt, the delay which gives the insured person time to reflect and to get over any momentary irritation. The regulations providing for immediate transfer had the effect of reducing the number of complaints

dealt with by the Medical Service Subcommittees, and the new provisions may have a contrary tendency. However this may be, it is certain that the new regulations will make for efficiency.

MEDICAL REPORT BEFORE SUMMARY CONVICTION.

IT is common enough for anyone who sits as a magistrate to find himself called upon to dispose of charges against persons of apparently inadequate mental equipment. There is a right way and a wrong way in these matters. The right way is to remand the accused person for medical report before passing sentence; the wrong way is to pass sentence without the necessary information as to the prisoner's mentality, and then to draw the attention of the prison authorities to his mental condition. The importance of following the correct method would hardly seem to require emphasis; yet it is evident that some benches of magistrates are still at fault; indeed, in one case cited in the last published annual report of the Prison Commissioners (Cmd. 2826), the magistrates actually convicted a prisoner and asked for a report upon his mental condition at the same time.

The typical cases to which the Prison Commissioners refer are instructive. A man is sent to prison for two months for assault and it is remarked that the magistrates confess great doubt as to the prisoner's state of mind, but "as there are no proofs .... they have no alternative but to send him to gaol." The magistrates ask that the man be kept under observation in prison, and that a report be sent to them upon his release. He is certified insane at the prison, being found to have delusions of persecution and to suffer from auditory hallucinations. In another example quoted by the Prison Commissioners a woman is committed to prison for 14 days for sleeping out, and the magistrates sapiently observe that they send her to gaol "so that there can be an opportunity for mental examination with a view to a report upon her state of mind as she seems to be mentally deficient if not exactly lunatic." Although almost all courts adopt the sensible practice of obtaining a report on the prisoner's mental condition before proceeding to consider sentence, it is strange to find that there are still magistrates who believe in the method of conviction first and mental examination afterwards. The medical officer of Holloway prison makes a further point of some importance. He remarks that the present practice, when a report on a prisoner's mental state is required, is for the Clerk of the Court to stamp on the warrant words to the effect that the magistrates direct that the medical officer should inquire into the prisoner's state of mind. In 98 per cent. of such cases, however, no information whatever accompanies the request. The police, it appears, are always quite willing to give information when asked, but it should not be necessary for the medical officer to ask them. Whenever a mental report is requested, the court or the police should furnish the medical officer with all possible details of the history of the case; in any event, there should be a statement of the reason why the court asks for mental examination of the accused prisoner. The medical officer of Holloway prison is clearly right in maintaining that he is entitled in these cases to be given such information as any medical practitioner would receive when consulted about a patient.

It may be recalled that the question of investigating the mental condition of persons charged with offences was one of the matters discussed at the International Penitentiary Congress held in London two years ago. The Congress asked itself, among other problems, "What may be done to forward the judicious application of the principle of individualisation of punishment by the judge who assigns the penalty to be inflicted on the offender?" Its answer took the form of a lengthy resolution declaring that the judge should first inform himself of all the material circumstances affecting the character, antecedents, conduct and mode of life of the offender, and *inter alia* should have a full knowledge of the physical and psychic conditions and the social life of the accused, and the motives for the crime. Inquiries should be made for this purpose before the trial; penal law should give the judge the power of obtaining information from anyone who knows anything about the defendant's personality and social environment, and if these means give no sufficient idea of his physical and psychic condition, the judge should be allowed to have him examined by physicians and psychologists. While the traditions and practice of British courts of justice have little to learn from the rather vague generalisations of international congresses, the principle embodied in this particular resolution is incontestably sound. It requires to be qualified by the reflection that nine-tenths of the offences annually dealt with by the courts of this country are minor matters (usually met by fines) in which exhaustive personal investigation is neither essential nor indeed always practicable. In more serious charges, where punishment is likely to take the form of deprivation of liberty, full knowledge of the offender's personal and social history and present condition should always be obtained. Anyone who has visited a court of assize or of quarter sessions in England will be aware that our judges seldom fail to insist that such information should be forthcoming.

OPENING OF THE MEDICAL SCHOOLS.

THE following arrangements are announced by medical schools in London:—

Charing Cross Hospital.—Prizes will be distributed at the hospital on Oct. 5th at 3.30 P.M. The annual dinner will take place on the same day at the Hotel Victoria, Northumberland-avenue, at 7 for 7.30 P.M. Dr. Cuthbert Lockyer in the chair.

Guy's Hospital.—The opening address will be delivered at the Medical School on Thursday, Oct. 6th, at 3 P.M., by Mr. M. F. Hopson, who will afterwards present the prizes. The biennial dinner will be held on Friday, Nov. 4th.

King's College Hospital.—The introductory address will be delivered by Sir Berkeley Moynihan at 2.30 P.M. on Friday, Sept. 30th. The annual dinner of past and present students will be held at 7 for 7.30 P.M. on the same day at the Criterion Restaurant, Piccadilly. Dr. G. F. Still will preside.

London Hospital.—The Old Students' Dinner will be held at the Trocadero Restaurant, Piccadilly Circus, London, on Thursday, Oct. 20th at 7.30 for 8 P.M. Dr. Angus Kennedy will take the chair.

London (R.F.H.) School of Medicine for Women.—The introductory address will be given at the School on Monday, Oct. 3rd, at 3.30 P.M., by Mr. R. G. Hogarth.

St. Bartholomew's Hospital.—The Old Students' Annual Dinner will be held on Monday, Oct. 3rd, at 7 for 7.30 P.M., in the Great Hall of the Hospital. Dr. Morley Fletcher will take the chair.

St. George's Hospital.—Sir Humphry Rolleston will deliver the introductory address in the board room of the hospital at 3 P.M. on Saturday, Oct. 1st, and will preside at the Medical School Dinner to be held at the Hyde Park Hotel, at 7.15 for 7.45 P.M. on the same day.

St. Mary's Hospital.—The annual dinner of past and present students will be held at the Connaught Rooms, Great Queen-street, on Saturday, Oct. 1st, at 7 P.M.

St. Thomas's Hospital.—The annual dinner of old students will be held on Friday, Oct. 28th, at 7.30 for 8 P.M., at the hospital. Sir Charles Ballance will preside.

Middlesex Hospital Medical School.—The introductory address will be delivered on Tuesday, Oct. 4th, at 3 P.M., at the Queen's Hall by Mr. Victor Bonney, after which prizes will be distributed by Sir Charles Sargant, Lord Justice of Appeal.—The annual dinner will be held the same evening at 7 for 7.30 P.M., at the Savoy Hotel (Embankment entrance). Mr. Somerville Hastings will take the chair.

University College Hospital.—The annual dinner of past and present students will be held on Friday, Oct. 14th, at 7 P.M., at the Hotel Cecil. Sir George Blacker will take the chair.

Westminster Hospital Medical School.—The inaugural address will be given in the board room of the hospital on Monday, Oct. 3rd, at 3 P.M., by Dr. E. W. Ainley Walker, Dean of the School of Medicine, University of Oxford.—The annual dinner of past and present students will be held at the Royal Adelaide Gallery, Gatti's Restaurant, Strand, on Saturday, Oct. 1st, at 7 P.M. Dr. de Souza will preside.

Annotations.

"Ne quid nimis."

INTERPRETERS OF NATURE.[1]

Sir George Newman has written an interesting collection of nine essays dealing with the careers of men who are all closely identified with the progress of medicine though for very different reasons. The essays have appeared over a considerable interval of time; they are, some of them, official addresses, and as such have already received publicity, while others have been privately circulated as the occasion of their writing dictated. It has required an author of wide sympathies to find a common denominator in Vesalius and Keats, Sydenham and Pasteur, but Sir George Newman points out rightly that these, with Galileo, Boerhaave, Hunter, William Osler, and Michael Foster (taking the names of the heroes of medicine almost at random) have all been interpreters of what their eyes had seen or their hands had handled, and each in his day and way was a pioneer of medical progress.

The essay celebrating the tercentenary of the birth of Thomas Sydenham, in its blend of eloquence and order, is an excellent example of Sir George Newman's methods; it is also valuable reading as a medical sermon. Sydenham is one of the greatest physicians in British medicine. He was never in the strict sense of the word a medical student, but appears to have been created a bachelor of medicine by an act of patronage just before election to a fellowship at All Souls. At Oxford there were great opportunities for the acquisition of the new Renaissance learning, while Linacre had founded lectureships for teaching the doctrines of Hippocrates and Galen in the University. But to Sydenham all this traditional lore was unsatisfactory; he felt the need of clinical practice, and the urge to apply the philosophical tenets, as he came to appreciate them, to some definite uses. Accordingly, in 1655, the year of his marriage, he started medical practice in Westminster. Three years later he went to Montpellier to obtain his first insight into clinical work, from which it may be concluded that he felt doubtful as to the value of the services which his book-learning had fitted him to render. At Montpellier he acquired by personal observation and through the teachings of one Barbeyrac—evidently good both at practice and exposition—methods of practice founded upon first-hand observation of signs, of symptoms, and of the efficacy of the therapeutical measures which these indicated. Thenceforward reliance upon bedside study and recognition of the power of nature formed the foundations of Sydenham's medical practice, and in his studies of the prevalent fevers of his time he laid the foundation of modern epidemiology. Yet great clinician that he was he failed to keep in touch with the progress of physiology, and in writings dated some years after Harvey's discovery he made no mention of it.

Other essays which will be of interest and value to students of medical history are that dealing with the great Paduan medical school and that tracing the influence of Padua upon Leyden, and of Leyden upon Edinburgh through Boerhaave. The whole volume forms a remarkable illustration of the fact that living medicine has its basis on the observation of Nature.

SERUM TREATMENT OF CEREBRO-SPINAL FEVER.

ANTIMENINGOCOCCAL serum is of undoubted value in the treatment of acute cerebro-spinal fever but connected with its administration there are certain fallacies into which the physician may slip unless he is on his guard. These fallacies are discussed by Dr. Edouard Frommel in a recent issue of the *Schweizerische Medizinische Wochenschrift*, Sept. 3rd, p. 873. It has been shown experimentally, he says, that intrathecal injection of horse serum in a normal man will cause all the signs and symptoms of acute meningitis. In such an attack there is in the early stages a polymorphonuclear leucocytosis and an increase of albumin in the cerebro-spinal fluid; whilst in the later stages the polymorphs are rapidly replaced by lymphocytes. The reaction generally passes off within 48 hours, though fatal cases have been reported. In acute cerebro-spinal fever the symptoms often tend to clear up if serum is given at the onset; the signs and symptoms abate and the cerebro-spinal fluid returns to normal. In these cases the serum reaction is either masked by the real disease or, as Dr. Frommel suggests, the membranes are too badly damaged by the acute infection to react to the serum as they would in a healthy subject. The period of acute inflammation is followed by a period of recovery, during which the inflammation subsides, the cells regain their normal function, and with it their power to react normally to foreign protein. This period is characterised by an increased sensitiveness to serum, especially if it is only given at long intervals. Thus when, after the preliminary injections, serum treatment has been stopped for a time, a further injection may be followed by a recrudescence of all the signs and symptoms of meningitis and an increase of the albumin and cell-count of the spinal fluid. This recrudescence should clear up in a few days if no more serum is given, but failure to recognise its cause may give rise to errors of prognosis and treatment, because the reaction will be mistaken for a relapse of the original disease, and the administration of serum, which is alone responsible for the symptoms, may be continued. These after-effects can be avoided if serum injections, once begun, are continued at regular and fairly frequent intervals (one to three days), until all signs and symptoms have abated and the cerebro-spinal fluid is clear. Once this stage has been reached and serum treatment has been stopped for a time, it should not be started again for an exacerbation of symptoms, unless examination of the cerebro-spinal fluid has made it clear that the relapse is genuine and not merely a delayed reaction to the previous treatment. Certain cases, Dr. Frommel points out, react badly to serum from the very start, and in these it is better to stop its use immediately.

EPHEDRINE.

FOR the last 5000 years the Chinese plant, Ma Huang, has been employed as a medicinal herb in the folk medicine of the East. The plant has been identified botanically as *Ephedra vulgaris* var. *helvetica*, and 40 years ago K. Nagai isolated from it an alkaloid to which he gave the name ephedrine. Ephedra is widely distributed throughout Europe, Asia, and America, but the varieties found in America are stated by C. Nielsen, H. McCausland, and H. C. Spruth to contain no alkaloid. From the European variety of *Ephedra vulgaris* E. Merck obtained a substance isomeric with ephedrine, to which he gave the name pseudo-ephedrine. The empirical formula of these substances is $C_{10}H_{15}ON$, and they are related in structure to adrenalin, tyramine, and phenylethylamine. K. K. Chen and C. F. Schmidt were the first to investigate by experimental methods the action of Ma Huang, and to show that the prolonged rise of blood pressure, the cardiac acceleration, and the vasoconstriction observed as a result of intravenous administration of a decoction of *Ephedra vulgaris* were due to the presence of ephedrine in the crude drug. They showed further that the action of ephedrine on the circulation, on smooth muscle, and on secretion was analogous to that of adrenalin and was due to a stimulation of the neuromuscular and neuroglandular intermediate substances. While for the most part ephedrine elicits responses similar to those produced by adrenalin, there is one outstanding difference between the two drugs.

[1] Essays. By Sir George Newman, Chief Medical Officer, Ministry of Health. London: Faber and Gwyer, Ltd. Pp. 296. 12*s*. 6*d*.

Ephedrine, being more stable, is effective when given by the mouth. Chen and Schmidt showed that a dose of 60 mg. given in this manner to a man produced a rise in blood pressure amounting to 20–30 mm. Hg in 15–30 minutes, and that this rise persisted for three or more hours. Another difference between the action of the two drugs is also related to the higher stability in solution of ephedrine. Its action is less intense but more prolonged than that of adrenalin. For example, in a comparative study of the physiological actions of ephedrine, tyramine, and adrenalin, Chen and Schmidt found that ephedrine in a dose 500 times as great as that of adrenalin produced a similar rise in blood pressure when given intravenously to anæsthetised dogs, but that the height of the rise was more slowly attained and its duration about seven times longer than the rise produced by adrenalin. The effect of tyramine on the blood pressure of anæsthetised dogs was found to be intermediate, in intensity and duration of response, between that of adrenalin and that of ephedrine. Tyramine, however, in doses of 100 mg. by mouth produced no rise in blood pressure in man, whilst an equimolecular dose of ephedrine raised the systolic and diastolic pressures by 15–20 mm. Hg under these conditions. It seems probable that the increased stability of ephedrine over tyramine, and of tyramine over adrenalin, is related to the number of phenolic hydroxyl groups contained in the molecule, adrenalin possessing two, tyramine one, and ephedrine none. These differences, however, are insufficient to account entirely for the differences in physiological response produced by the three substances. Were this not so, the action of β-phenylethylamine on blood pressure would be as prolonged as that of ephedrine, whereas in point of fact the action is of greater intensity, but of much shorter duration. Moreover, as shown by Chen, β-phenylethylamine, like adrenalin, is inactive when given in doses of 50–150 mg. by mouth to man, and pseudo-ephedrine, which differs from ephedrine merely in the reversal of the stereochemical configuration of the —HCOH group, shows an action similar in type to that of ephedrine on the blood pressure of man and of dogs, but much weaker in intensity. It is clear, then, that the constitution of the side chain of the phenyl ring is an important determining factor in the pharmacological action of these drugs.

A substance having the pharmacological properties of ephedrine should prove of great value clinically in those conditions in which a prolonged adrenalin effect is desired. Its action in man has recently been the object of a series of physiological and clinical investigations. W. S. Middleton and K. K. Chen have studied the objective and subjective effects of its administration by mouth to man, the ophthalmological effects of its local application, and the reactions of asthmatics to the drug. They find that doses varying between 50 and 400 mg. produce an average rise in systolic pressure of 28 mm. Hg, and that this rise is usually accompanied by some quickening of the pulse. The rise in pressure is manifested about 30 minutes after the oral administration of the drug, reaches its maximum in about one and a half hours, and begins to fall about two hours later. The dose recommended by them is from 60–90 mg., and with this amount such untoward symptoms as perspiration, tremor, palpitation, and faintness, sometimes observed with the larger doses, were absent. They have also been able to confirm the original observation of K. Miura in 1887 on the mydriatic effect of the drug, in that dilatation of the pupil begins about 15–30 minutes after instillation, reaches its maximum in 30–60 minutes, and lasts from 3–9 hours. No signs of conjunctival irritation were observed. Ephedrine has also been shown to be effective in the treatment of spasmodic asthma. Its beneficial action in this condition has been demonstrated by W. Berger and H. Ebster, and according to them it sometimes produces relief in cases of migraine. These investigators have recently made a clinical study of the action of ephetonin, a synthetic substitute for ephedrine. This substance also is active when given by mouth to man, and benefit is stated to have been observed in a large number of mild and moderately severe cases of asthma, in chronic bronchitis, and in hay fever, in which last condition the drug was employed in 5 per cent. solution as a nasal spray. It seems likely that in ephedrine we possess a valuable therapeutic agent, but the extent and limitations of its use can only be determined by more extensive clinical investigation.

GERMAN DERMATOLOGICAL CONGRESS.

THE fifteenth annual congress of the Deutsche Dermatologische Gesellschaft was held at Bonn from Sept. 5th to 7th, and was a notable gathering, both from the scientific and the social point of view. Prof. Erich Hoffmann, of Bonn, whose name will always be associated with that of Schaudinn in the discovery of the spirochæte of syphilis, made an admirable chairman, and was ably seconded by a large staff. The meetings, at which no less than 115 communications were offered for debate, were held in the Beethoven concert hall, and the main features of the programme were papers and discussions on the biological and physical characters and effects of X rays and of the Bucky "borderland" rays which have been on trial in Germany for the past year. Dr. G. Bucky, who now lives in New York, himself took part in the discussion. Among some 400 dermatologists who attended the congress were Prof. P. G. Unna, who was described by the chairman as the Nestor of dermatology, and Profs. Karl Herxheimer (Frankfurt), Josef Jadassohn (Breslau), J. R. Almkvist (Stockholm), Howard Fox (New York), and J. F. Schamberg (Philadelphia). The sessions began daily at 9 A.M. and with a luncheon interval of two hours continued till 6 P.M. On the last afternoon, at Prof. Hoffmann's clinic, there was a demonstration of many rare and interesting cases, these being afterwards discussed in full conclave in the Beethoven hall. Official but quite informal entertainments were provided every evening, not the least popular of these being a river trip to Remagen by Rhine steamer with fireworks and illumination of the Bonn frontage. Thanks largely to Frau Hoffmann and her lady helpers the meeting added fresh lustre to the reputation for hospitality which the city of Bonn has so long possessed.

POISONING FROM SOLID FUEL.

DURING the war when methylated spirit was difficult to obtain solidified fuel became popular as a substitute. It has certain advantages over a fluid fuel, such as portability, and many people still find it convenient especially for use when travelling. In the September issue of the *Analyst* Sir William Willcox and Mr. C. Ainsworth Mitchell draw attention to the danger of leaving such tablets within the reach of children. They describe a case where serious illness followed the consumption by a boy of 16 of 5 g. of a substance which was designed for use as fuel, and which on examination agreed in its characteristics and reactions with metacetaldehyde. The boy is said to have swallowed a portion of a tablet in mistake for a sweet. No ill-effects occurred till seven hours after when the patient became flushed, restless, and delirious. A few hours later the temperature rose to 100° F. and convulsions occurred, followed by five further attacks of convulsions. The urine had sp. gr. 1·014, was very acid, and contained a trace of albumin. There was marked tenderness of the calves of the legs during this period. The temperature remained between 100° and 101° F. for 36 hours and then fell to 99° F., where it remained for 24 hours, afterwards becoming normal. The treatment consisted in large doses of alkalis (in the form of sodium citrate, 60 gr.; sodium bicarbonate, 30 gr.; water to 1 oz.) given every four hours by the mouth. Rectal injections of 2 drachms of sodium bicarbonate to the pint of normal saline were given every six hours. Throughout the period during which the convulsions

occurred chloral (10 gr.) and potassium bromide (30 gr.) were given four hourly. The urine remained very acid for three days in spite of the large doses of alkali that were administered. After the convulsions had ceased potassium bromide, in doses of 15 gr., was given three times a day for four days. The patient made a good recovery, but the albuminuria persisted for four days. After recovery there was some loss of memory for several days. Sir William Willcox and his collaborator comment on the curious fact that metacetaldehyde should be so much more active than its isomer, since relatively large doses of paracetaldehyde (paraldehyde) can be taken without ill-effects. It is possible, however, that the action may have been due to an impurity.

MUSCULAR EFFORT AND CARDIAC FAILURE.

THE limitation of muscular effort and its relation to cardiac failure was discussed in the July issue of the *Quarterly Journal of Medicine* by A. E. Clark-Kennedy and Trevor Owen. Experiments were performed on healthy young adults to determine the respiratory exchange at increasing rates of work, which was of a very severe nature. The effect of breathing air containing 26 per cent. and 16 per cent. of oxygen, and also a mixture of air and 5 per cent. carbon dioxide, while performing similarly severe work was also determined. It is concluded that the alterations in the respiratory exchange during exercise, when air or other oxygen-nitrogen mixtures are breathed, are chiefly due to lactic acidosis, and when the pressure of carbon dioxide in the inspired air is also increased, a lactic and carbonic acidosis are concerned. The authors maintain that carbon dioxide elimination as well as oxygen supply must be an important factor in determining the amount of work of which a man in capable. An increase of oxygen in the inspired air makes the elimination of carbon dioxide easier, by delaying the accumulation of lactates, the physico-chemical factor in the limitation of voluntary effort being a rise of hydrogen-ion concentration in the blood and tissues. This is ultimately dependent upon failure of the whole cardio-respiratory system, including the heart, lungs and blood, but the output of the heart is sufficient to cope with the venous return, and the circulation does not fail before the ventilation. In heart failure due to disease, there is clinically venous congestion and œdema of the lungs and other tissues. This does not occur in extreme muscular exhaustion in health. It is therefore improbable that the mechanism is the same in both cases—i.e., exhaustion of the reserve power of the heart. In compensated heart disease congestive heart failure does not occur with violent muscular effort, the exercise being compulsorily abandoned before cardio-respiratory disintegration occurs. This could be explained if the ability to effect pulmonary ventilation is reduced in a degree corresponding with the reduction in the heart function, and it has been shown that the vital capacity is diminished in patients with heart disease. This may be due to a protective mechanism, and if this protective reaction fails, congestive heart failure would occur. The article is illustrated by two plates showing the apparatus used and full details are given of the experiments on which this theory of heart failure is based. In the concluding discussion Clark-Kennedy and Owen compare the mechanism of limitation of effort in health with that which is found in congestive heart failure, where not only does circulation fail before ventilation, but the cardiac output no longer keeps pace with the venous return; for, as they point out, the term heart failure is capable of more than one interpretation. To the physiologist it signifies that the heart is no longer able to maintain an adequate blood-supply to the active tissues; oxygen-want, in other words, is their criterion, since all the manifestations of circulatory insufficiency consequent on violent exertion, in the normal healthy individual, can be accounted for by oxygen-want. The clinician, on the other hand, is accustomed to think in terms of the abnormal. He is concerned not with healthy young men, but with those less fortunate persons whose myocardium is already scarred by rheumatic or other infection. The clinician's picture of advanced heart failure is something quite unknown in the realms of physiology; it is that of the patient with orthopnœa, œdema, and venous congestion of the internal organs. These symptoms are manifestations not of oxygen-want, but of the inability of the ventricles to keep pace with the venous inflow. It is with the first of these two conceptions that the writers' experimental observations are concerned. Prof. A. V. Hill and his colleagues have shown that the duration of violent exercise is limited by the oxygen intake. When the oxygen requirements of the tissues are greater than the supply coming from the lungs the body contracts, as they express it, an "oxygen debt." The more violent the exertion the more rapidly does this debt mount up. But like other overdrafts it had its limitations, and the attainment of these limitations spelt the cessation of exercise. Thus the mile runner has to go more slowly than the sprinter or his oxygen debt will stop him before he reaches the tape. Having worked out the limitations of oxygen intake and oxygen debt respectively, Hill was able to calculate the speeds at which it is theoretically possible to run different distances; and he has shown that the times calculated in this way were just a little better than the corresponding actual records established by the world's champion athletes. Clark-Kennedy and Owen now suggest that CO_2 output as well as oxygen intake should be considered in this connexion; and further, that the limitation of voluntary exertion in normal subjects depends on a simultaneous failure of cardiac and pulmonary functions. The latter hypothesis is opposed to that which has hitherto been current—namely, that circulatory insufficiency supervenes while pulmonary ventilation still remains adequate.

MECHANICS OF THE GALL-BLADDER.

THE exact mechanism by which the gall-bladder empties its contents is still unknown. The theory that the flow of bile is regulated by any sphincter-like action at the mouth of the gall-bladder can no longer be maintained, and in view of recent research it is even difficult to find evidence of any active contraction on the part of the muscle of the gall-bladder itself. The introduction of cholecystography by Dr. E. A. Graham has not only led to easier diagnosis in many cases of gall-bladder disease, but is enabling workers in all parts of the world to investigate more closely the physiology of the biliary tract. The work of Dr. Graham himself and of his associates, G. H. Copher and S. Kodama, has suggested that the rôle of the gall-bladder is chiefly passive, its contents being emptied mainly by the washing out of bile when fresh bile flows in, or by the elastic recoil of the distended gall-bladder at the moment when relaxation occurs of Oddi's sphincter at the duodenal termination of the common bile-duct. The chief evidence for this view lies in an ingenious series of experiments in which a small rubber bag was substituted for a gall-bladder in a dog and was shown to fill up with dye and subsequently empty itself in just the same manner as the gall-bladder itself had done. Recent work by G. E. Burget [1] of the University of Chicago goes to support the theory that the gall-bladder itself is incapable of contraction and that its control of the bile flow is confined to the action of a certain tonus which facilitates emptying when the opening into the duodenum becomes patent. An opposite view is set out by A. Hamrick, of the Mayo Foundation, Rochester.[2] He has made numerous studies with the aid of X rays of the movements observed in animals after the injections of iodised oil into the gall-bladder. The opaque oil was

[1] G. E. Burget: Amer. Jour. Physiol., 1927, lxxxi., 422.
[2] R. A. Hamrick: Amer. Jour. Med. Sci., 1927, clxxiv., 168.

introduced directly into the gall-bladder by a simple surgical operation, and X ray photographs taken during the subsequent period demonstrated its progress from the biliary tract into the intestine. In a large series of animals no expulsion of oil or other movement was ever observed during fasting, nor did factors such as increased intra-abdominal pressure appear to have any effect. However, when food was administered—especially food of a fatty nature, such as egg-yolk and cream mixture—the gall-bladder appeared to empty rapidly. Just before or during emptying the shape of the vesicle became elongated and pointed towards the cystic duct, an appearance which was noted so frequently that Hamrick concluded that it must be indicative of some intrinsic contraction of the musculature of the gall-bladder. Emptying did not continue simultaneously with digestion, the meal being expelled from the vesicle at various intervals following the ingestion of food. In another experiment a rubber tube was fixed so that it proceeded from the lower portion of the common duct through Oddi's sphincter in the lumen of the duodenum, keeping the lower end of the duct continuously open. In these circumstances external pressure over the gall-bladder was sufficient to expel some of its contents, but complete emptying was only brought about by feeding. Hamrick considers that the muscle of the gall-bladder itself is the main agent bringing about normal emptying of the organ, but it is hard to discover in his published work sufficient ground for this opinion. It is, on the other hand, abundantly clear, as other observers have insisted, that emptying occurs in relation to movement of the duodenum. The theory of contrary action of Oddi's sphincter and the musculature of the gall-bladder has not found support in recent years, but Hamrick's present work does, perhaps, give grounds for believing that the movements of the bile vesicle are not as entirely passive as has recently been maintained.

CITY HEALTH ADMINISTRATION.

NEITHER the lay public nor the bulk of the medical profession has any clear conception of the variety of duties and responsibilities undertaken by those who enter the public health services. The former visualise the health departments as clearing-houses for complaints about nuisances more or less vaguely affecting the public health; the latter are most familiar with the operations of the epidemic sections of these departments, having as a rule but a hazy idea of the ramifications of their other pursuits and viewing them with a cynical suspicion which is rarely acute enough to promote a closer inquiry. Dr. Carl E. McCombs, of the National Institute of Public Administration and New York Bureau of Municipal Research, has written a book entitled "City Health Administration,"[1] which is designed to enlighten all classes of the American public on the subject; it is written in a lucid and interesting style, and its scope and thoroughness clearly mark it out for the use of those who are preparing for a life of public service, whether official or voluntary, and the lessons which it gives will be useful in all countries.

The book is divided into three parts dealing with (1) Municipal Health Functions; (2) the Organisation and Administration of Sickness Preventive Functions, and (3) the Organisation and Administration of Sickness Treatment Functions. The unattractive character of these headings should not be allowed to repel the prospective reader. Under each of them the existing arrangements in America are described and criticised in a succession of chapters devoted to every aspect of the organised prevention and treatment of disease. On this side of the Atlantic the subject is one of first importance, since the Government's proposals in relation to the administration of the Poor-laws are likely to bring the whole of British public health administration under critical inspection at no distant date. Dr. McCombs, with whose point of view we find ourselves throughout in substantial agreement, will repay careful reading by all who are interested in the municipal side of local government. Young public health officials, too, will find help in the solution of many of the awkward problems of administration with which they are constantly faced.

[1] London and New York: The Macmillan Company. 1927. Pp. 524. 21s.

ALTHOUGH the returns of the general election in the Irish Free State are not complete at the time of writing, a number of medical men have already been elected. In South Dublin, Dr. T. Hennessy was elected on the first count, heading the list of Government successes, while Dr. Myles Keogh, who formerly sat as an Independent but now comes forward as a Government candidate, was also elected in the same constituency. In Co. Cavan, Dr. J. J. O'Reilly, also a Government candidate, was successful. Three medical men have been returned in the Fianna Fail interest—namely, Dr. P. J. O'Dowd in Co. Roscommon, Dr. James Ryan in Co. Wexford, and Dr. F. C. Ward in Co. Monoghan. In addition to these six, Sir James Craig has been returned as an Independent Member for Dublin University.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCXLII.

THE TREATMENT OF OPEN FRACTURES OF THE LIMBS.

THE main treatment of any open fracture must be (1) to render the wound clean, which entails a thorough excision of all lacerated tissues; (2) to convert it as soon as is possible—i.e., immediately or by secondary suture—into a closed fracture, and (3) to rectify the fracture itself.

Excision.

It may be urged that a complete excision is unnecessary when the wound is caused from within by a sharp fragment which has perhaps momentarily penetrated the skin, creating a small puncture wound, and when the damage to the skin and muscle are slight. The necessity for excision in these cases must depend on individual judgment based on the condition seen; in some cases interference is unnecessary. When there is doubt prejudice should be in favour of excision, since otherwise a definite risk of sepsis is involved. Not only is the virulence of an infective agent an unknown quantity, but the whole point of excision as a routine is to cleanse the wound and so gain the one chance of its successful primary closure. With a few exceptions it is safer to apply the rule of complete excision to all open fractures.

When a large fragment has penetrated the skin from within, or the external injury from without has caused an extensive wound with much laceration of the skin and soft tissues, it may not be possible to close the wound after excision. This is more especially true in wounds on the inner aspect of the leg and the region of the ankle-joint, common sites for such injuries. In such circumstances it is useless to bring the skin together under tension, since sloughing almost invariably follows; in my experience, too, it is a dangerous procedure to undermine the skin in order to close the wound, since in this way an infective agent is given a wider area over which to act. In such cases, therefore, it must be recognised that the severity of the injury to the soft tissues has excluded the possibility of obtaining a completely closed fracture immediately; and though such wounds are usually allowed to heal by granulation, if the chance arises for closure by secondary suture it should be

taken. When in the first instance the wound is left open it is necessary only to cover it. Drainage-tubes, gauze packs, and so forth serve no useful purpose; they are, as a rule, sure paths of infection and should not be introduced.

It may be reasonably urged that if open fractures do not come into a surgeon's hands until a day or two after the accident, when infection has already occurred, it is either not necessary or not justifiable to deal with the wound radically. Again, every case must be judged separately. It may be unnecessary to excise a small wound which has been inflicted 24 or 48 hours previously and is not septic. On the other hand, if infection is present but localised a complete excision is often practicable, and may be extremely useful; but it is problematical whether free excision at this stage will render sterile an already infected wound, and complete closure at any rate should not be attempted. In the civil open fracture it is rare to encounter an acutely spreading infection which demands wide incisions, or even removal of the limb. The essential point is that all open fractures must be treated within the first few hours, and in the majority of cases infection is prevented by excision of the wound within six or up to twelve hours of its causation. As a general rule, the presence of shock need not be a contra-indication to excision and splinting. How far such a course may be negatived by severe shock must be a matter of judgment, and it should be borne in mind that immobilisation of the injured limb in itself tends to reduce shock.

To fulfil the demand of a complete excision it would appear logical that the fractured surfaces or fragments of bone which have been exposed to infection should be removed. In the completely shattered bones caused by gunshot, some surgeons advocated the removal of all completely loose fragments, while others retained all fragments of any size as useful for the eventual repair of the bone, though by doing so sepsis might be prolonged. It has been recommended, too, in civil open fractures that the protruding fragments should be excised. In my practice this procedure has not been adopted, as apart altogether from the inevitable shortening, or risk of non-union, fragments of any size are necessary for the restoration of alignment, and in the lower limb especially are essential for the restoration of the full strength of the bone for purposes of weight bearing. In all cases the very small completely detached fragments of bone are removed together with the shreds of periosteum, and the exposed surfaces of the larger fragments cleansed; in the exceptional case the nature of the accident or intense soiling of the fragments may demand a more extensive removal of bone; in the majority, however, it is justifiable, in my opinion, to preserve all bone fragments.

Restoration of Alignment.

The alignment of the bone should be restored after the excision has been completed. Often it is extremely tempting to fix the fragments in position straightway by a plate or other means, especially as it is a common experience afterwards to find that slipping has occurred from the reduction obtained at the operation. In all probability fixation may be done many times without untoward results, but as a general rule, in my opinion, it should never be done. The main concern at this stage must be to obtain a clean and, if possible, a closed wound, and the alignment, though it should be attended to, for the moment must be a secondary consideration. There is no knowledge of the type of organism that has gained entrance and no guarantee that the excision has been sufficiently complete to prevent sepsis; the risks of infection in every case are too great to permit of the introduction of any foreign body for the purpose of fixation, and the results seen from this are often lamentable.

If it is not possible to maintain alignment by suitable splinting and traction then at a later date (10–14 days), if there is no evidence of sepsis in a closed wound, an open operation may be performed and reduction and fixation effected. This should be done in the full realisation of the fact that sepsis may be lit up immediately, or that a mild infection may occur at a later date; under no circumstance should such an operation be undertaken in the presence of a still open wound. In favour of operation it must be realised that gross displacement, obvious within a week or two of the accident, tends rather to increase than diminish; that in the leg, where this question is most likely to arise, errors of alignment give rise to greater disability than in any other part of the body; that the margin of time in which a perfect result can be obtained is a small one, for if the question is shelved and an operation is decided upon when malunion has occurred, far greater mechanical difficulties present themselves, and the chance of the perfect result is much diminished. With a better understanding, however, of the necessity and requirements of the initial operation and of the more effective methods of splinting, the secondary operations should become increasingly unnecessary.

The Value of Complete Immobilisation.

The maintenance of absolute rest of the part wounded must be achieved by the splinting. The value of a complete immobilisation of a limb in these cases cannot be over-estimated; if it is essential to assist in the healing of a wound that has been closed by operation, it is even more essential for the wound that has become infected. Immobilisation is best obtained in both the upper and lower limbs by means of a Thomas splint with traction, which must be suited to the position of the wound; it should be continued until the wound has healed or sepsis has quietened, when, if the alignment is satisfactory, provision may be made to permit of voluntary movements of the joints. Occasionally, in the lower limb more especially, the mobility of joints may have to be sacrificed temporarily, at any rate, in order to obtain stability of the bone.

In my own experience union is delayed more frequently after an open fracture than in any other type, not including the cases in which there has been an obvious infection. Even in the best circumstances, when the wound has been excised and closed, alignment restored, the limb appropriately splinted, and any obvious signs of inflammation are absent, union may be delayed for a considerable time. It is my impression, founded on the condition found at secondary operations, that it is the presence of a septic infection which prevents union, though it is of so mild a degree that there has been no obvious evidence of it in the wound or in general systemic disturbance. In the large majority of such cases union does eventually become firm, though to achieve this immobilisation at the site of fracture may have to be considerably prolonged. If, therefore, the alignment of the fragments is satisfactory, a secondary operation should not be undertaken for delayed union in these cases; operative measures will tend to maintain or exaggerate the sepsis, however mild, and thus defeat their own object.

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PRINCE OF WALES'S HOSPITAL, TOTTENHAM.—Towards £50,000 appealed for on behalf of the Prince of Wales's Hospital, Tottenham, Sir Albert Barratt, one of the governors, promised £10,000 on condition that the hospital raises a like amount. This has now been done and the donation has accordingly been claimed.

CHARING CROSS HOSPITAL.—The income of Charing Cross Hospital last year was £56,272 and the expenditure £54,810, thus leaving a balance of income over expenditure of £1462. The hospital having acquired the adjacent premises, formerly occupied by the Royal Westminster Ophthalmic Hospital, which has been removed elsewhere, will utilise them for some of the present needs. The sum of £70,000 had to be paid for the freehold and buildings and £30,000 will be required for alterations and equipment. The hospital is out of debt.

Special Articles.

THE UNIVERSITY OF LONDON: ITS PRESENT CONSTITUTION AND MACHINERY.

BY PERCY M. WALLACE, M.A. OXF.,

I.*

BY the promulgation on February 13th, 1900, of the Statutes made by the Commissioners appointed by the University of London Act, 1898, followed a fortnight later by detailed Regulations supplementary thereto, those responsible for the administration of the University, together with a large number of institutions and individual men and women intimately concerned with the subject-matter of these documents, found their long suspense at an end. At last they knew where they stood—or rather where they would stand as soon as these Statutes and Regulations came into active operation. On the whole the prevailing sentiment was one of relief. That there was not to be a second University established in London had of course been made manifest two years previously by the instructions and provisions set forth in the Act by which the Commissioners were appointed. The schemes for the foundation of an entirely new teaching University, with the title of "Albert" or later of "Gresham," had failed to attract sympathetic attention in high quarters, and had perished almost still-born: the advocates of a third, by which the existing institution, with its territorially extensive area of influence, should be retained under the title "University of England," while a new federal body controlling higher education within the metropolis should take over the old designation "University of London," had underestimated the fervent pride with which the existing graduates treasured their vested interest in titles which had for over sixty years testified to a high academic standard, attained in many cases under serious disadvantages. A sound instinct and a not ignoble sentiment had together won the day. Apprehension, therefore, of the obvious confusions and overlappings and irritations that would have arisen from the co-existence in London of two degree-giving institutions both enjoying the title of "University" was no longer present. But until the full text of the new Statutes and Regulations had been definitely published it was not possible to forecast the future with any certainty.

At last, however, the long contest was over. The proposals and counter-proposals, the concessions and compromises, the revisions and re-revisions, the cross-currents and oblique currents of heterogeneous oppositions, which marked the long agitation for reform,[1] were consigned to countless waste-paper baskets, and the path of future development was in its main outlines plain for all to see. In what follows I have thought it most profitable, not to summarise the formal language of the Statutes section by section, but to indicate their practical bearing upon the situation at the moment of their promulgation. Similarly, it will be more immediately intelligible if I refer to various bodies by the names commonly used in the University, in preference to the more cumbrous official titles by which they are designated by the Commissioners.

Three Main Departments.

The University as reconstituted was to be neither unitary nor federal nor professorial in the normal sense of those terms, nor of any other single type—indeed, it was to be exceptional in structure in correspondence with the exceptional character of the conditions that had necessitated its reform. It was to be organised, so to speak, vertically in three main Departments—the Internal, the External, and the Extension—each under the immediate supervision of a Standing Committee of the Senate. For convenience' sake, let us take the External first. The Committee in this case, consisting mainly of the representatives of the graduates and known as the External Council, had for its function to advise the Senate upon the various matters that had constituted the province of the old University, the work of which may thus be regarded as having been taken over intact as a going concern. These matters were the superintendence, regulation, and conduct of the several examinations of students—metropolitan, provincial, and colonial, in whatever locality and by whatever methods prepared for their successive tests[2]—the appointment of their Examiners, the recommendation of their courses of study, and their status and interests generally; these were henceforth to be designated "External Students." Similarly, the main business of the Extension Board would be to advise the Senate upon the maintenance within the London area of "University Extension" courses of lectures under the system at that period administered (roughly speaking) by Cambridge in the north and east of England, by Oxford in the south and west, by Manchester in Lancashire, and in London and its suburbs, where there was then no corresponding authoritative body in the possession of machinery for comprehensive higher education of this character, by an independent Society, established for this purpose alone and conducting its own procedure and finance, but advised in the appointment of Lecturers and Examiners by a Joint Board constituted in equal proportions by the Universities of Oxford, Cambridge, and London. To the Extension Board was further to be entrusted the duty of advising the Senate upon the inspection and examination of secondary schools.

Of the three vertically parallel Departments, therefore, the second and third (according to the order in which they were named in the Statutes) were charged with definite and clearly ascertainable functions already for many years in full and experienced operation, though up to that time they had been exercised by different bodies. But it was upon the Department first named in the Statutes that the Commissioners had bestowed the greatest proportion of their labours; and this was the feature of their work that attracted the chief interest of those engaged, corporately and individually, in the higher education of the metropolis. A fresh creation was required to solve the intricate problem and to put an end, definitely and with precision, to the prolonged controversies. There was to be a new body, a Standing Committee entitled the Academic Council, consisting almost entirely of representatives, appointed on a Faculty basis, of the teaching staffs of institutions that were henceforth to be component parts of the reformed University; and the duty of this body would be to advise the Senate upon all matters concerned with the status and interests of "Internal Students"—that is, of matriculated students who were pursuing approved courses of study in "Schools" of the University or in other institutions under its own Teachers.

The Twenty-four Schools.

It is necessary here to explain the signification and content[3] of various terms used in a technical sense in the Statutes as framed by the Commissioners. The "Schools" were to be public educational institutions

* Part II. will appear in the next issue of THE LANCET.

[1] Some account of these, "swift shafts that speak to the initiate," but a bewilderment and almost a stupefaction even to the intelligent reader of to-day who had not followed the controversies at the time, appeared in THE LANCET of September 3rd, 1898 (pp. 591–593).

[2] This phrase is, of course, not applicable to medical degrees, for which evidence of attendance and clinical practice at some recognised Medical School had always been required; but from 1858 onwards all other degrees had been awarded solely by examination.

[3] In giving these explanations I have not used the phraseology of the Commissioners, but have as far as possible set out their meaning in ordinary language.

(that is, institutions not carried on for profit by the proprietors) in London,[4] of established position, with staffs and equipments adequate for the standard required by the University; and the Commissioners themselves designated twenty-four institutions as qualified to be the first enrolled in this category. These were University College in the Faculties of Arts, Laws, Medicine, Science, Engineering, and Economics; King's College in the same six and Theology; Hackney College, New College, Regent's Park College, Cheshunt College, Wesleyan College (Richmond), and St. John's Hall (Highbury) in the Faculty of Theology; the Royal Holloway College and Bedford College in the Faculties of Arts and Science; the Royal College of Science in the Faculty of Science, with the Wye Agricultural College in the branch of Agriculture only; the Medical Schools of St. Bartholomew's, London, Guy's, St. Thomas's, St. George's, Middlesex, St. Mary's, Charing Cross, and Westminster Hospitals and the London School of Medicine for Women in the Faculty of Medicine; the Central Technical College of the City and Guilds of London Institute in the Faculty of Engineering; and the London School of Economics in the Faculty of Economics and Political Science. At each of these "Schools" the Commissioners specified by name and subject such members of the staff as they considered suitable to constitute the first company of "Recognised Teachers"—to the total number (including "recognitions" of the same person at more than one "School") of 440.

In addition to these specially privileged foundations there were a number of others, less elaborately or comprehensively organised, and in most cases concerned only with one or more branches of the purview of the Faculty concerned, which for these or other reasons the Commissioners did not consider worthy of the rank of "School," but which conducted specialised work of the requisite high standard; at these institutions selected Teachers were individually recognised as members of the University staff.[5] To take the illustration which is of special interest to readers of THE LANCET, the Institutions of this kind whose activities fell within the scope of the Faculty of Medicine were the London School of Tropical Medicine, the London School of Dental Surgery, the College of the National Dental Hospital, the Institute of Dental Technology and School of Mechanical Dentistry, the School of Pharmacy of the Pharmaceutical Society, and the Medical Schools of (or Classes at) the Royal London Ophthalmic Hospital, the National Hospital for the Paralysed and Epileptic, the Brompton Hospital for Consumption, and the Hospital for Sick Children. It should be added, to make clear the governing policy of the Commissioners in this matter, that "provisional recognition" was also accorded to fifty members of the staffs of the twelve above-mentioned Schools in the Faculty of Medicine who were engaged in teaching Preliminary and Intermediate subjects, such provisional recognition to be effective until the Senate might be able to provide or secure common courses of instruction for Internal Medical Students in those subjects at some one or more centres under their immediate control. This project, thus tentatively though hopefully put forward by the Commissioners, failed of realisation, as will be recorded later.

But these "Recognised Teachers" were not to constitute by themselves the teaching staff of the re-organised University. It was from the nature of the case manifest that on first getting to work the Internal Department would have no University staff at its disposal, but would on the other hand be concerned with the staffs of two dozen Colleges and other institutions of established position, many of which had been with notable success carrying on work of University rank for half a century or longer. Hence the care with which the Commissioners drew out their scheme for the recognition by the University of individual Professors, Lecturers, and other teachers at these existing foundations, and provided the new Senate with the select nucleus indicated above. It was also manifest that for the fulfilment of its highest purposes the University must in due course have a staff of its own—that is, appointed by itself under its own conditions and working under its own direction. For the creation, however, of such a body—Professors, Readers, and Lecturers, for whom generically the distinctive title of "Appointed Teachers" was prescribed in advance—with Demonstrators and other assistants, considerable time would be required; and in the meanwhile it would be the business of the Senate to encourage a new corporate spirit among the existing staffs (several of which could boast men and women of the highest distinction), and to expedite the work of reconstruction by setting in motion the machinery of correlation and co-ordination further provided by the Statutes. For plainly, if the Internal side of the University was to develope an organic unity and character of its own, there must be established as speedily as possible opportunities for regular and continuous deliberation among those who in their respective departments of study had up to that time been working, if not in isolation, at any rate independently, under their several governing bodies.

Boards of Studies.

This brings us to the consideration of the Boards of Studies, which, with reference to the suggested description of the Internal and External Departments as working in vertically parallel planes, may be regarded as forces operating upon them horizontally. On these bodies the Statutes conferred very extensive powers, for the full appreciation of which it is necessary to understand exactly the position of the higher authorities designed for the University. It will have been observed that, in summarising the functions of the three Statutory Standing Committees, I used in each case the phrase "to advise the Senate upon. . . ." This was not accidental—it indicates a fundamental principle of the new constitution. These bodies were to be purely advisory, not only the supreme government of the University but the entire management of all its affairs, concerns, and property being vested in the Senate alone. This ultimate authority, however, was forbidden by the Statutes to come to any determination upon any matter relating to the Internal or to the External department of its work until it had invited and received a report thereon from the Academic or from the External Council respectively. In order that there might be no question as to the extent of this limitation of the powers of the Senate, the Statutes specified at considerable length the matters to which it applied—with such particularity, indeed, that the concluding clause in each case ("generally upon any matter relating to the Internal [*or* External] Students") appears almost redundant. On the same principle, the two Councils were themselves instructed to invite and receive reports from the relevant Board or Boards of Studies before tendering to the Senate advice upon "any matter relating to courses of study, provision for teaching or research, examinations and the appointment of Examiners, or the granting of degrees or certificates of proficiency." This precise and rigid restriction of the powers, first of the Senate and secondly of the two Councils, in all matters that concerned the education and examination of Internal Students and the examination of External Students, was of the essence of the reconstruction of the University. For this reason, and as indicative of the scope of its operations as conceived in the mind

[4] "Within the administrative County of London including the County of the City of London" is the official normal limitation for Schools; from this the Royal Holloway College and the Wye Agricultural College were by Act of Parliament specifically exempted. For virtually every other purpose the area within which the University was to work was that of a circle with a radius of thirty miles from its Central Office.

[5] In the complicated nomenclature of the University's reorganisation it was at an early stage found convenient to speak of these institutions at which, not being "Schools," there were, either by this nomination of the Commissioners or later by the action of the Senate, "Recognised Teachers," as "Institutions" *par excellence*, in contrast with "institutions." The expression "Schools and Institutions of the University" thus obtained a quasi-statutory significance.

of the Commissioners, and further in view of the lines upon which the work of the Senate will later be shown to have developed during the past twenty-seven years, it appears desirable to set out in this place the titles of the original Boards of Studies. The list drawn up by the Commissioners and by them recommended for immediate appointment consisted of thirty-two:—Theology; the Greek and the Latin Languages and Literatures; Oriental Languages and Literatures; Mediaeval and Modern Languages and Literatures; History; Archaeology and Palaeography; Philosophical Studies; Pedagogy; Fine Art (for all the Fine Arts, exclusive of Music but inclusive of Architecture); Laws; Economics and Political Science (including Commerce and Industry); Music; Preliminary Medical Studies; Intermediate Medical Studies; Advanced Medical Studies; Dentistry; Pharmacy; Hygiene and Public Health; Mathematics (including Astronomy and Navigation); Physics; Chemistry and Chemical Industries; Geology; Botany; Zoology and Comparative Anatomy; Physiology and Experimental Psychology; Ethnology; Geography (Physical, Political, and Commercial); Civil and Mechanical Engineering; Electrical Engineering; Marine Engineering and Naval Architecture; Mining and Metallurgy; Agriculture.

By its breadth of range this scheme secured to those concerned with every subject of University study ample and definite opportunity of making their views—the views not only of skilled specialists but also of practical instructors—known to the Senate through the two correlating Councils. Each Board was to consist in the first place of the leading Teachers of that particular subject of study in the several constituent Schools, and to these the Senate were empowered at their discretion to add external experts—that is, persons not directly associated with the teaching work of the University—to the number of not more than a quarter of the total membership of the Board. It was further specifically provided, for the protection of the interests of the smaller Institutions, that Teachers not attached to any School should be adequately represented on each Board; and, in addition, as a matter of practical convenience, that any two or more Boards might, and when requested by the Senate should, meet and act in concurrence and render a joint report. Nor was the function of the Boards limited to consideration of and report upon matters specifically referred to them from above; any Board might itself originate proposals. In so far, therefore, as the actual details of curricula and schemes of examination were concerned, the Boards of Studies were definitely invested with prerogative and far-reaching powers; and upon them in the first instance—upon each in its own province—would lie the peculiarly delicate and responsible task of suggesting by what means the degrees conferred upon Internal and upon External Students, whatever variations in detail this distinction might entail, should represent as far as possible the same standard of knowledge and attainments—an essential feature of the new constitution upon which the Statutes laid special stress.

The Eight Faculties.

Running roughly parallel with the Boards of Studies, above them in the hierarchy, but not so powerful in that there was no obligation imposed upon the two Councils and the Senate to consult them, were to be the eight Faculties—Theology, Arts, Laws, Music, Medicine, Science, Engineering, and Economics. In this connection, as generally (though not invariably) throughout the Statutes, the term "Faculty" is used to designate, not (as commonly elsewhere) an administrative department of the University, nor even the whole body of persons engaged in teaching a particular subject or group of cognate subjects, but a judiciously select number of such persons, membership of the relevant Faculty (in certain cases more than one) being conferred either by original nomination by the Commissioners, or by subsequent "appointment" (as contrasted with "recognition") to a Teachership, or, in the case of other Teachers, by individual admission by the Senate. Of these three categories of membership the first and second were definite; the conditions of admission under the third were deliberately left to the discretion of the Senate, the only condition imposed by the Statutes being that "as far as possible all sections of Teachers" should be represented. By one of their Regulations the Commissioners nominated 8 persons to be the first members of the Faculty of Theology, 31 of that of Arts, 10 of that of Music, 162 of that of Medicine, 50 of that of Science, 13 of that of Engineering, and 10 of that of Economics. For the constitution of these original nuclei the Commissioners appear to have confined their selections to the heads of departments and important sub-departments at the Schools and Institutions severally concerned, leaving it to the Senate, who would be able to act upon more immediate knowledge, to strengthen and maintain them in accordance with the successive conditions and circumstances of each case and the general development of the University at large. What might appear to be the disproportionate size of the Faculty of Medicine was of course due to the coincident facts that it was concerned with no less than twelve original Schools and that there are a considerable number of separate subjects in the complete medical curriculum. The Faculty next largest in number of Schools was that of Theology, with seven; but these were in nearly every case small in respect of both staff and studentry, and the curriculum for degrees is less extensive. In Arts (with four original Schools) and Science (with five) the number of subjects is much larger; smaller, but still considerable, in Engineering (with three Schools) and in Economics (mainly but not exclusively centred at one); while Music, as a single subject complete in itself, formed no part of the scope of any of the Schools but was taught at three Institutions. It will be observed that the Faculty of Laws, specified in the Statutes as one of the original eight, was not at that time brought into actual existence. As they pointed out in a Report accompanying their Statutes, the Commissioners had hoped, in view of the fact that within the British Empire almost every civilised system of law was to be found in active operation, and of the consequent special value to numerous British public officials of a philosophical study of Jurisprudence, to complete their general scheme by establishing such a Faculty together with, and on principles similar to those applied to, the other seven. But the four Inns of Court declined either to become Schools or to recommend persons for recognition as original Teachers; and "to their great regret" the Commissioners declared that they had not been able "at present" to constitute any "effective Faculty of Laws." This failure of their efforts was, they added, the more lamentable because the University of London was "honourably distinguished by being the first University in this country which conferred degrees in Laws after and as the result of adequate examinations," and at the date of their Report had on its Register about 500 Bachelors of Laws and 70 Doctors of Laws. But in face of the refusal of all co-operation by the four Inns of Court they felt that they must leave this deplorable gap in the fabric of the reformed University, and could do no more than recognise a few individual teachers of various branches of the subject at University College.

By this elaborate machinery of Boards of Studies, Faculties, Recognised and Appointed Teachers, Schools and Institutions, and Academic Council—each body furnished with its definite place and powers in the general scheme—the Commissioners produced what was confidently expected to be an effective solution of the problem that had for many years engaged the anxious attention of those responsible for the conduct of higher education in London. For no feature of the manifold agitation for reform had been more urgently accentuated than the discontent

of the teaching bodies at the complete detachment of the examining authority from themselves, who had thereby in many cases had imposed upon them uncongenial lines of study and limitations of their range of instruction. This interference with the freedom essential to advanced teachers had become intolerable, and it had been generally recognised that there could be no permanent satisfaction until the whole of the academic resources of the metropolis had been harmoniously organised into one authoritative body. A definite and coherent—though necessarily complicated—scheme had at last been brought to the birth; and, as I have said, the prevailing sentiment on the promulgation of the Statutes and Regulations was one of relief. This was, however, in certain cases shadowed by apprehension—of two kinds. On the one hand, some of those who up to that date had won or who hoped in the future to win their degrees by private study or from provincial or colonial Colleges feared that their status might suffer from the establishment of a teaching University in the metropolis. On the other, there were among the governing bodies and staffs of the Colleges and Institutions which were henceforth to form integrally component parts of the re-organised University some who were doubtful how the new apparatus would actually work when set in motion. It would be no small element in the gravity of the task entrusted to the new Senate to remove this apprehension and distrust, so that the new machine might be worked to the utmost of the powers and goodwill of all concerned for the furtherance of the purposes which they were appointed to execute.

The New Senate.

The body upon whom in the last resort this prodigious burden was laid, inheriting from its predecessor the title of Senate, was to consist of 56 persons:—the Chancellor and the Chairman of Convocation, both elected by Convocation; four persons appointed by the Crown; 16 by Convocation[6]; two by the Royal College of Physicians; two by the Royal College of Surgeons; two by University College; two by King's College; one by each of the four Inns of Court; two by the Law Society; one by the Corporation of the City; two by the County Council; one by the City and Guilds of London Institute; and 16 by the Faculties.[7] It will be observed that this constitution, which in its main features was settled in advance by the Act by which the Commissioners were appointed, was designed to secure, as far as was practicable within the limit of number prescribed, equitable representation for all classes and categories concerned—for corporations and professions, for graduates and teachers, for every main branch of University study, for Internal and External interests.

Such was the composition of the "supreme Governing and Executive Body" of the reconstructed University, which, while inheriting the high and honourable traditions of its earlier history, was in future to occupy a larger sphere and to exercise more extensive functions. It was no longer to be content with examining and setting its hall-mark upon men and women who had been prepared for its tests by other agencies, independent alike of itself and of one-another. To this was henceforth to be added the promotion of research and the advancement of science and learning in the several departments of activity that fell within its purview, and the organisation, improvement, extension, and control of higher education throughout the area specially committed to its charge.

(To be concluded.)

[6] Six of these were to be chosen by the graduates in Arts (one to be transferred to the graduates in Divinity as soon as these should number 30), one by those in Laws, one by those in Music, two by those in Medicine and Surgery, and six by those in Science.

[7] Four each by those of Arts and Science, three by that of Medicine, and one each by those of Theology, Laws (when constituted, and meanwhile by the Crown), Music, Engineering, and Economics.

MENTAL DISORDER AND DEFICIENCY.

WORK OF THE BOARD OF CONTROL IN 1926.

THE most important event for the Board of Control in Lunacy and Mental Deficiency last year was its appearance before the Royal Commission, the main provisions of which were summarised in THE LANCET, 1926, ii., 239. The Report[1] for 1926 contains an account of the evidence which was given by the Board and of the extent to which the Commission subsequently gave effect to their recommendations. The Board, for example, recommended in dealing with the "non-volitional" case that the patient should be received without certification, on the recommendation of two medical practitioners, into any approved institution or single care. The conditions proposed were that the Board should be notified and given power of inspection, and that the patient should be allowed to leave on 72 hours' notice if he recovered volition. After six months the treatment could be continued for another six months on the recommendation of two independent physicians. This procedure closely follows that at present in vogue in Scotland. The Commission were unable to recommend the elimination of a judicial authority, although they strongly sympathised with the views of the Board.

Mental Disorder.

The number of notified insane persons under care in England and Wales on Jan. 1st, 1927, was 136,626, an increase of 2743 on the preceding year's total. This increase is greater by 161 than the average increase for the last five years, and shows that the yearly toll of insanity is on an ascending curve. There is, in the Board's opinion, no evidence that the incidence of mental disorder is increasing; but the normal growth of the population is making the problem of accommodation an acute one, about which the Commissioners are justly anxious. Apart from ordinary ward space, most mental institutions need admission hospitals, sick wards, wards for excited patients, and laboratories. A slight relief is being afforded by the reopening of the L.C.C.'s Colony at Epsom for 429 patients, by the provision of a 269-bed annexe for females at Springfield Hospital, Malden, and by the opening of the new home and training-school for nurses at Barming Heath, whereby 160 beds will be released. This expansion does not, however, cover the growth in the number of patients, and, in the words of the Board, "the County and Borough Mental Hospitals must be regarded as full." If serious overcrowding is to be avoided, they say, energetic measures are necessary. It appears from the Report that Poor-law accommodation for harmless patients is not being used nearly as fully as it might be, but that even if it were the special types of accommodation mentioned above would still be necessary.

The recovery-rate for County Hospitals was 30·3 per cent. and for Borough Hospitals 38·5. The combined death-rate was 7·3 per cent.; the fall has been continuous since 1922. The post-mortem rate was 68·1 per cent., varying from 100 per cent. at Cumberland to 7 per cent. at Middlesbrough and 9 per cent. at Croydon. Enteric fever occurred in 33 hospitals as against 35 in 1925, showing the usual predilection for females. The Board recommend prophylactic inoculation in hospitals where the disease occurs every year, as an adjuvant always to hygienic measures and laboratory facilities. 515 cases of dysentery—more than double the 1925 total—were notified, with, however, only 98 deaths against 79. The rise is partly, but not entirely, due to greater accuracy in diagnosis. Dysentery attacks the staffs much less than typhoid. The incidence-rate of tuberculosis fell from 11·8 per cent. to 9·7 per cent. during last year, and the death-

[1] H. M. Stationery Office. Part I., 2*s*.; Part II., 9*s*.

rate from 8·6 per 1000 to 8·0. The death-rate from pulmonary tuberculosis was 6·6 per cent., the lowest yet recorded. The number of patients who committed suicide was 55, but only 27 of these were in residence. This is a decrease of one in the residents and an increase of three only in those on leave or trial—a noteworthy result considering the large numbers now allowed these privileges. Two occurred at branch houses, a circumstance on which the Board comment unfavourably. Voluntary boarders have increased by about 8 per cent. throughout the country. The Board report very favourably on the standard maintained by the licensed houses.

Mental Deficiency.

The shortage of accommodation for mental defectives, upon which the Board reported so gravely last year, has been still further accentuated. No new institutions have been provided, and the total increase is 226 beds only. The total number of beds available is 5301, against the estimated defective population of 40,000 to 45,000. The Board are still urgently inviting schemes for providing extra room. The reluctance of local authorities to meet the necessities of the situation is, in the Board's view, not due so much to ignorance or to unwillingness to perform their duty, as to the heaviness of the rates already levied. It is not sufficiently recognised that the community has to pay for the support of its feeble-minded whether they are housed in special institutions or allowed to remain at large. The necessity for immediate action was equally well recognised by the Departmental Committee on the Treatment of Young Offenders, which sat early this year and whose report the Board quote. Five of the seven local authorities who were reported last year to have acquired estates have now submitted schemes, and five more bought estates last year, including Newcastle-on-Tyne, whose purchase included a large and easily adaptable building which will, it is hoped, soon be available for some 300 patients. The Board recommend all local authorities whose population is not large enough to need a full-sized colony to combine with their neighbours without delay. If all the existing schemes mature in two or three years the situation will be substantially better, but they are only local measures, and many authorities will still be without accommodation even for the most urgent cases. The Board repeat their advocacy of the colony system, describing the organisation at Monyhull, Birmingham.

Marriage and Sterilisation of Defectives.

The Board are naturally uncompromising in their condemnation of marriage among mentally deficient persons, and advise the publication by local authorities of the facts concerning this abuse, so as to prepare the way for legislation. That public opinion is still ignorant of the necessity for preventing defectives from marrying is shown by the many reports from local authorities of the refusal by justices of petitions for detention in order to allow pregnant or even non-pregnant defective girls to marry. The Report emphasises the need for selecting more carefully the persons to whom marriageable defectives are licensed, and points out the danger of placing defectives under the guardianship of their parents, who too often either deny the defect or deliberately encourage marriage or conceal intimacy. The Board have not altered their views on sterilisation, and reiterate their opinion, published last year, that this measure would not diminish the need for colonies. The idea that many patients are only segregated to prevent them from propagating is considered highly erroneous, and the Report quotes a minute from Dr. Douglas Turner, of the Royal Eastern Counties Institution, who supports by convincing arguments the view that the proportion of defectives whom sterilisation would release from supervision is about 3 per cent. The Report does not touch on the important question of venereal disease, which would be propagated quite as freely, if not more so, by sterilised than by unsterilised defectives.

Statistics.

Improved ascertainment is responsible for much of the increase in the known defective population, both because diagnostic methods have become more accurate and because authorities have become more alive to the importance of the work. The number on record at the end of 1926 was 60,234, a proportion of 1·59 per 1000; this is an increase of 4754 during the year. Of these only 22,739 are under care. Reporting authorities fall into two distinct groups: those who report 2 per 1000 or over, and those who report less than 1 per 1000. The number of the latter group has decreased from 56 in 1925 to 30 in 1926, and only 11 bodies report under 0·45 per 1000. These results point, as the Board maintain, to the advisability of renewed endeavour on the part of some local authorities, and particularly to the realisation by certain local education authorities that their own failure to notify makes a fatal gap in the community's scheme for the continuous care of the mentally defective.

Sixteen new occupation and industrial centres were opened during last year, and 109 more patients attended. The Board call for every effort to increase the average attendances, which are only 63·8 per cent. of the registered numbers, and to raise the numbers at the smaller centres. It is doubtful, they say, whether it is worth spending public money on a centre with an average attendance below six. Only seven out of 74 centres are reported as unsatisfactory, and in six of these the supervisors have no special qualifications.

874 patients were under guardianship at the beginning of this year, 273 more than at the beginning of 1926. This increase is probably due to the new powers given by the Amendment Act of 1925, and the Board request local authorities to exercise the greatest care in choosing guardians, a duty not always satisfactorily performed.

The percentage of successful discharges of high-grade defectives was 14, as against 7, 11, and 12 in the three preceding years. The number of idiots and imbeciles in mental hospitals is still 150. Apart from the inconvenience they cause there, they miss the training most of them are capable of receiving.

After an appreciation of the work done by the Central Association for Mental Welfare during the year, the Report gives the number of admissions to county and borough mental hospitals for encephalitis lethargica as 135, and to mental deficiency institutions as 70. The total since 1918 is now 384.

NATIONAL HEALTH INSURANCE MEDICAL BENEFIT.

NEW PROCEDURE AS TO CHANGE OF DOCTOR.

AN alteration of the terms of service of insurance practitioners has been notified by the Ministry of Health to the clerks of Insurance Committees who will advise practitioners in the following form:—

Under the powers conferred on them by Clause 2 of Part I. of the First Schedule to the National Health Insurance Medical Benefit Consolidated Regulations, 1924, the Insurance Committee have decided, with the Minister's approval, and with effect from Oct. 1st next, to alter accordingly the terms of service of practitioners who are under agreement with them, and notice is hereby given to you that on and after this date the provisions of these regulations will form part of the terms and conditions on which insurance practice will be carried on in the Insurance Committee's area, and in so far as they affect the rights and obligations of insurance practitioners shall be deemed to form part of the practitioner's terms of service.

As from Oct. 1st, 1927, an insured person whose name is already included in the list of an insurance practitioner in the district in which he is residing, and who desires to apply for acceptance by another

practitioner, may either transfer with the consent of both practitioners, notified by their signatures on the appropriate space of the medical card, or with the authorisation of the Insurance Committee, which will be given as a matter of right but with effect only after the expiry of 14 days after application. Under the latter alternative the insured person must send to the Insurance Committee his medical card with a letter stating his intention to transfer, and the medical card will be returned to him with a slip attached authorising transfer after the appropriate date. This slip should be completed by the insured person and signed and dated by the practitioner accepting him for treatment. The card with the slip attached should then be forwarded by the practitioner to the Committee. Acceptance cannot be registered until the date named, and in the meantime the insured person should continue to obtain treatment from the former practitioner.

A new form of medical card is being prepared which will contain instructions as to the new procedure, but it is not possible, for reasons of economy, to make a general issue of new cards to all insured persons. Cases will therefore occur in which insured persons in possession of old medical cards will apply as at present for acceptance by a new practitioner. In such cases you are requested to be good enough to inform the insured person that, as he is already on the list of another practitioner in the district, it is necessary that he should obtain either the written consent of the latter to the transfer or the authorisation of the Insurance Committee. The practitioner on whose list the insured person is included can give his consent in cases where old cards are presented, by writing across Part A the words " I consent to transfer " and appending his signature and the date. The insured person and the new practitioner should then complete Part B. The new style of medical card will provide a space Part C to be completed by both practitioners, in cases where transfer is made by consent.

To assist the Committee in bringing the change of procedure to the notice of insured persons, I am to request you to be good enough to exhibit the accompanying poster containing the new instructions in a prominent place in your waiting-room. Further copies of the poster can be obtained on application to the Committee.

I am to add that the new regulations do not in any way affect the existing procedure regarding the acceptance of persons not already on the list of another practitioner practising in your district, of temporary residents, or of persons on the lists of approved institutions.

Text of the New Regulations.

16.—(1) An insured person, other than a member of an institution or a person who is permitted or required to make his own arrangements for obtaining treatment, may at any time make application for acceptance by an insurance practitioner notwithstanding that he is at the date of application included in the list of another practitioner, and if accepted shall forthwith be entitled to obtain treatment from the practitioner to whom application has been made.

Provided that if the insured person is at the date of the application included in the list of another practitioner and has not removed permanently or temporarily outside the district within which the practitioner has undertaken to provide treatment the application of such insured person shall only be accepted if either :—

(*a*) both the practitioner in whose list the insured person is included and the practitioner to whom he applies for acceptance consent to the transfer, and such consent is signified by the practitioners in accordance with the instructions printed on the medical card ; or

(*b*) the insured person has forwarded to the Committee his medical card together with a notice of his desire to transfer and not less than fourteen days after such notice is received by the Committee the insured person and the practitioner to whose list he proposes to transfer have signed a statement in a form approved by the Minister and issued by the Committee indicating the agreement of the insured person and the practitioner that the transfer should be effected, which form shall be attached to the medical card by the Committee.

Poster to Exhibit in Waiting-room.

The poster (referred to above) regarding change of doctor is couched in the following terms :—

After Oct. 1st, 1927, if you wish to change your doctors and if you are still living in the district in which your present doctor practises you should proceed as follows :—

Either (1) You may transfer with the consent of your present doctor and of the new doctor ; in that case you must take your medical card to be signed by both doctors, and leave it with the doctor to whom you wish to transfer.

Or (2) You may send your medical card to the Insurance Committee with a letter stating that you wish to change your doctor. It is not necessary to give the reasons why you wish to change. The card will then be returned to you with instructions as to when and how you may transfer. Until you have complied with the instructions sent to you regarding transfer, you should continue to obtain treatment from your present doctor.

If you have not chosen a doctor, or if you have removed either temporarily or permanently from the district in which your present doctor practises, it is not necessary for you to write to the Committee. All you need do is to take your medical card to any insurance doctor you wish to choose. If you are not in possession of a medical card you should complete a form of application (Form Med. 50) to be obtained at the nearest post office and send it to the Committee.

Postage must be prepaid on all letters to the Insurance Committee.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Progress of Housing.

IN 1928 the question of housing subsidies of every sort falls to be reconsidered, Scotland having obtained an extra year, since, for sufficient reasons, housing progress was not equal to that of England. But at last Scotland seems to have got into her stride, and the large programme projected by the Scottish Housing Commission is in a fair way to be realised. During 1927 the various housing schemes, including those for slum clearance, have begun to bite into the mass of arrears. It is noticeable that in the course of eight years Scotland has largely ceased to be a stone-house country, and has largely become a " brick-and-harl " or cement-block country, although Aberdeen has stuck almost entirely to granite and no Aberdonian would wish it otherwise—at least, in the main areas of the city. But on its fringes and particularly in Deeside, which for seven miles on the north is thickly peopled with villas, " brick-and-harl " or cement-block is making an impression. Elsewhere in Scotland brick and cement can still undersell stone, in spite of the innumerable quarries, and what Carlyle and his mason father would have said of this decline of the mason's craft can be guessed from the Latter-Day Pamphlets. But Carlyle could not have failed to perceive that the country has many thousand more houses than it boasted ten years ago, when the Scottish Housing Commission reported in a document that was not shelved.

The monthly returns for 1927 show that the number of houses finished has not once fallen below 1000 per month, and the average approaches 1550. If this rate is maintained for the next five months, the year will have the handsome record of 18,500 houses, and to these may be added 2500 steel houses erected under the direct control of the Scottish Board of Health. If we total the houses finished, those now building, and those already tendered for (including subsidised " private enterprise " houses), we get a number approaching 115,000 houses, not including the many structures erected without subsidy.

The One-room House.

The lessons of Dr. J. Burn Russell's famous lecture or sermon on " Life in One Room," which prompted a cardinal chapter in the Report of the Housing Commission, is brought to memory by Dr. A. S. M. Macgregor, the present medical officer of health for Glasgow, in his annual report. For this includes a special inquiry by Dr. J. A. Wilson on the age-factor and housing-factor in the incidence of pulmonary

tuberculosis in the east end of Glasgow. Dr. Wilson finds that a marked and rapid fall has taken place in the extent to which adults over 25 years of age are affected. He notes that in the case of males an increase in the size of house is associated with a diminished incidence of the disease, most marked in the young adult and at ages from 46–65 years. As between the one-room and the two-apartment house, the two-apartment house shows a greater incidence at ages 11–15 and 21–25. At all other ages, the one-room house has the greater incidence. In the case of females, at all ages, except 6–10 years and over 66 years, the improvement in the housing status is represented by a marked decline in incidence. If we take the one- and two-apartment houses as against the three-apartment, the decline in incidence is very strikingly shown in the three-apartment house. To those familiar with the area investigated, the "functional" difference between the one-apartment and two-apartment house is largely nominal; but, even so, the two-apartment house scores. This investigation emphatically confirms the Royal Commission's chapter, in which the many Glasgow investigations were fully recognised. The disconcerting fact remains that in this area the one-apartment houses rise to 26 per cent. of the whole, the two-apartment houses 53 per cent., the three-apartment 16 per cent., while only 5 per cent. of the houses are of four or more rooms. Thus 79 per cent. of the houses are of one or two apartments. Dr. Wilson comments: "These graphs, it is suggested, demonstrate in a forceful way the important bearing of housing on the incidence of this disease, the larger houses being associated with a diminished incidence in most age-groups. Much has been written in condemnation of the one-apartment house, and if further condemnation were needed the material is to be found in these results. But it has to be remembered that the house, in an industrial area, is only a reflex of the economic condition of the inhabitants, so that any scheme of prevention must deal with the problem from both angles." This fresh investigation deserves minute study.

The McKelvie Isolation Hospital, Oban.

On the occasion of the opening on Sept. 8th of the new pavilion attached to this hospital, Sir Leslie Mackenzie, as a member of the Scottish Board of Health, delivered an address in which he testified to the great generosity of the original founder, the late Dr. R. B. McKelvie, and the maintenance of civic spirit shown by Mr. Macpherson and his sister in providing funds for the extension and equipment of the institution. He reminded his audience that Dr. McKelvie's first gift of £1000 was later increased to £1500 when the estimate of the cost of erecting the fever block had to be revised. During the lapse of 30 years new needs have been revealed, and these are being met by the recent extension, so that Sir Leslie Mackenzie was able to congratulate the corporation of Oban on now possessing, with its recent addition, an effective modern institution of 42 beds. Sir Leslie Mackenzie closed his address by reviewing the situation brought about, especially in urban communities, by the compulsory notification of infectious disease, made compulsory in Scotland just after the foundation of the McKelvie Isolation Hospital. He said:—

"It is 30 years since compulsory notification was made universal in Scotland. This was done through the Public Health Act of 1897. The ordinary and well-known infections like typhoid fever, typhus, small-pox, scarlet, diphtheria, erysipelas, puerperal fever, and some others were subjected to compulsory notification. Since that time many other diseases have been added, and the list of notifiables now approaches 30. Some have come into the list at one date and some at another. Notification applies perfectly to some and imperfectly to others. But look at the broad fact. In the 30 years since 1897, the medical men have notified 1,450,818. Of these, 770,000 have been removed to hospitals under the management or control of the local authorities for public health. These vast numbers will give some idea of the problem that constantly faces the Public Health Local Authorities of Scotland, which at present number over 300. Take one or two special diseases. In these 30 years, there were notified 137,705 cases of pulmonary tuberculosis. Of these, 66,122 were removed to hospitals or sanatoria. But notification has applied to tuberculosis only since the year 1906, when notification was voluntary, and compulsory since about the year 1910. The numbers notified rise as high as 9000 a year, though recently there has been a falling off until in 1926 the number notified was 6669. Non-pulmonary tuberculosis has been notifiable since 1914. The total notified in those 13 years has been 60,454. Of these 17,232 were removed to hospital. The totals for pulmonary and non-pulmonary tuberculosis were: 198,159 cases notified, 83,354 cases removed. The disease is going down, but with those massed figures before us we can realise how much there is still to do. Take, now, typhoid fever. In the 30 years there were notified nearly 63,000 cases. But whereas in the early years the notifications ran up as high as 5600, the notifications in the last ten years have never, in a single year, exceeded 800, and in some years the notifications have fallen below 400. Obviously, typhoid fever is now under effective control. As to typhus fever, even in 1892 it was comparatively rare. Now we have had at least one year in the 30 without a single case, and one year the notifications were as low as two, although the disease crops up in little outbreaks unexpectedly still. As to small-pox, it is enough to say that in 1926 only one case of small-pox was notified. This year the record will not be so good, but small-pox is also under effective control. Of scarlet fever, the numbers notified in the 30 years approached 530,000. The disease is still very widely prevalent, but, thanks to improved hospital accommodation and improved nursing, the death-rate has remained low. Of diphtheria, the total numbers in 30 years were about 207,000. It is still too prevalent, but the new methods of dealing with scarlet fever and diphtheria are already beginning to have an effect, and as the generation goes on the effects will be still more manifest. . . . In the year 1919 acute primary pneumonia and acute influenzal pneumonia were subjected to compulsory notification. In the eight years since then there have been notified nearly 84,000 cases. Pneumonia, as has been shown in detail in the report of the Scottish Board of Health for 1925 and again in 1926, is one of the most dangerous and fatal and prevalent of all the diseases in Scotland. The large local authorities have treated many thousands of cases, and although it is yet too soon to draw conclusions, there is little doubt that the terrible death-rate from these forms of lung disease will gradually yield to the better management and nursing possible in well-equipped hospitals."

The new extension has been made especially to meet the problems presented under Maternity Service and Child Welfare schemes.

UNITED STATES OF AMERICA.

(BY AN OCCASIONAL CORRESPONDENT.)

The Negro Population.

Dr. Louis L. Dublin, of the New York Metropolitan Life Insurance Company, has recently compiled some statistics about the negro in the United States, and publishes them, together with his conclusions, in the *American Mercury* for September. The first figures relating to the coloured population were, he says, collected in 1790, when there were 757,208 negroes in the country. In 1920 the number had increased to 10,463,131, but whereas in 1790 the negroes amounted to 19·3 per cent. of the total population, in 1920 they amounted to only 9·9 per cent. The health conditions of the negro in America have improved almost pari passu with those of the white man. Dr. Dublin's figures show that the expectation of negro males at 50 is only a year less than that of white males, and of negro females only a little over two years less. According to the books of the Metropolitan Life Insurance Company, in 16 years the mortality record of the coloured policyholders showed a decline of 16·3 per cent. Marked improvement has been exhibited with regard to deaths from tuberculosis, pneumonia, and communicable diseases, though certain degenerative diseases continue to be very prevalent. In the cities, and more especially in the northern cities, to which the negroes have emigrated, there has been generally an increase in the death-rate and a decrease of the birth-rate, and it is only in the rural districts of the south that there is now an appreciable excess of births over deaths. Dr. Dublin estimates that the negro population in A.D. 2000 will be about 14,500,000,

but as the total population of the United States at that date should have increased to 185,000,000 or thereabouts the coloured people will constitute a little less than 8 per cent. of the total.

Industrial Accidents.

The American Engineering Council has published a report on its national safety and production survey, stating that industry must free itself from unnecessary waste by using modern safety methods to decrease accidents. The rate of production per man-hour, for the industrial groups studied, was 14·4 per cent. higher in 1925 than in 1922, and the rate of accident frequency per man-hour was 10·4 per cent. lower in 1925 than in 1922. The rate of accident severity per man-hour, however, was 2·5 per cent. higher in 1925 than in 1922. Among other recommendations made, the report suggests that the same managing direction and control be given to decreasing industrial accidents as is given to increasing production, and that the executives of plants which have high accident-frequency and accident-severity rates should initiate, direct, and control ways and means of reducing these rates at least to the level of other plants in their industry.

Increase of Diphtheria in New York.

The Department of Health for New York State has issued a report in which it is stated that diphtheria has increased from 69 to 79 cases per 100,000 inhabitants during the first six months of the year. A similar increase has been noted in New York City.

The late Dr. Lewis.

Dr. H. Edwin Lewis, who died on August 6th, was for almost twenty years managing editor of *American Medicine*. Born at Providence, Rhode Island, in 1875, he graduated from the University of Vermont Medical Department in 1897, and went to McGill University, Montreal, for post-graduate study. After practising for some years in Burlington, specialising in tuberculosis, and serving for several years on the Vermont State Tuberculosis Commission, he came in 1906 to New York City, where he combined medical practice with the editorship of the *International Journal of Surgery*. In 1908 he was made managing editor of *American Medicine*—a journal founded and edited by the late Dr. George M. Gould. A talented writer, Dr. Lewis was also an excellent business man, and he was for a time President of the American Medical Editors' Association. Throughout his life he laboured under the burden of ill-health and physical disabilities, and the fact that he succeeded in spite of this handicap is a proof of courage and perseverance.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 10TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 146 (last week 111); scarlet fever, 1617; diphtheria, 997; enteric fever, 107; pneumonia, 478; puerperal fever, 32; puerperal pyrexia, 99; cerebro-spinal fever, 10; acute poliomyelitis, 38; acute polio-encephalitis, 3; encephalitis lethargica, 30; continued fever, 1; dysentery, 8; and ophthalmia neonatorum, 102. No case of cholera, plague, or typhus fever was notified during the week.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (1) from enteric fever, 16 (2) from measles, 6 (0) from scarlet fever, 14 (4) from whooping-cough, 24 (5) from diphtheria, 78 (10) from diarrhœa and enteritis under two years, and 21 (5) from influenza. The figures in parentheses are those for London itself.

With regard to the death from small-pox reported in the Registrar-General's weekly return last week (No. 35) we understand that the death referred to was that of a man aged 77, who was admitted to the Doncaster Small-pox Hospital on July 12th and discharged cured on August 20th. Death took place on August 28th, the cause of death being stated thus on the certificate: I. (*a*) toxæmia; (*b*) gangrene of right foot; (*c*) small-pox.

Obituary.

SIDNEY RAWSON WILSON, M.B., B.S. LOND., M.SC. MANCH., F.R.C.S. EDIN.

WE have already announced the death of Dr. S. R. Wilson, senior anæsthetist to the Royal Infirmary, which occurred at his home in Manchester on Sept. 12th. Dr. Wilson had long been investigating the proportion of gas and oxygen which gives the best results, and the physiological problem whether the anæsthetic properties of gases are due to limitation of oxygen or to a special action on nerve-cells. At the time of his death he was planning a crucial experiment on this point. Though he did research work at the hospital he was also accustomed, in spite of warnings, to make observations on himself, and his death seems to have been due to premature exhaustion of an oxygen cylinder during such an experiment.

"S. R.," as he was familiarly called, came of a family long connected with Manchester. His grandfather, George Wilson, took a leading part in the Free Trade movement of the middle of the nineteenth century, and was a strong supporter of Joseph Jordan, one of the founders of the Manchester Medical School—a fact of which the younger Wilson was very proud. His father is Dr. A. C. J. Wilson, of Penistone, and S. R. Wilson was born in that town 45 years ago. On going to Manchester University in 1900 he soon showed his qualities, and carried off most of the prizes of his time. Even as a student he had an extensive practice in coaching, taking in hand fellow students in subjects he had himself just passed or in the very subjects he was studying. He even coached in subjects which were not directly in his own line, learning up the work shortly before he taught it. By his clearness of comprehension and his simple way of putting things he made medicine more easy for his fellow students than could the acknowledged teachers. Careless in his dress, and outspoken in his criticism, he was somewhat of a free lance in his student days. Soon after qualification, with a long series of academic triumphs to his name, he took up anæsthetics and in his specialty worked up to a leading position in Manchester, becoming senior anæsthetist to the Royal Infirmary. He was especially interested in the use of nitrous oxide, and in recent years in ethylene, but during the last year of his life he spent much time in studying some unexpected deaths following the use, as he claimed, of impure ether.[1] He thought deeply, and his brain was always engaged on the problems which anæsthesia presents. He was also a forceful teacher, and large numbers of his former pupils, in mourning his loss, will remember how much they owe to him. In the University of Manchester he held the post of lecturer in applied physiology, and he was deeply interested in the history of his old medical school and in any problems that affected its welfare. Hypnotism and psychology were favourite studies, and he applied hypnotism for anæsthesia to the small extent that opportunity provided. In 1922, with Mr. A. H. Southam, he published a paper on the cancer of the scrotum which occurs in mule-spinners. This subject he had discussed many years previously with the late Mr. George A. Wright, and had been studying till sufficient material was accumulated.

Personally, he had a sort of rugged charm. Though a fighter and by no means fine spoken, he was always sympathetic and always ready to help. He had a distinct wit, and when in vein he could be intensely amusing. Those who attended his lectures on the history of anæsthetics came away thinking them the most interesting and the most clever they had heard.

Dr. Wilson married the daughter of Mr. John Mitchell, who survives him with a son and a daughter. The funeral took place on Sept. 16th at the Manchester Southern Cemetery, after a largely attended memorial service at St. Chrysostom's, Victoria Park.

[1] THE LANCET, 1927, i., 1117; and ii., 88.

CHARLES EDWARD PAGET, M.R.C.S., D.P.H.

Mr. C. E. Paget, whose death occurred on Sept. 11th, was for 28 years medical officer of health for the County of Northampton, and wrote a number of books on hygiene. Born in 1858, he was the son of Sir George Paget, F.R.S., Regius Professor of Physic in the University of Cambridge, and was educated at Charterhouse and St. Bartholomew's Hospital. At one time he acted as secretary to his uncle, Sir James Paget, F.R.S., but soon after qualifying in 1882 he decided to devote himself to public health work and was appointed medical officer of the Westmorland combined sanitary districts. The duties of this office he combined with hon. secretaryship of the Epidemiological Society for seven years, but after succeeding Sir John (then Dr.) Tatham as medical officer of health for Salford in 1889, he was obliged to resign this extra work, though he later became a member of the Society's Council. While at Salford Mr. Paget —as he preferred to be called—was elected president of the North-Western branch of the Society of Medical Officers of Health, and was lecturer in public health at Owens College and examiner in the Victoria University of Manchester. Already he had published two handbooks on the subject, "Healthy Schools" (1884) and "The Construction of School Sanatoria" (1887), and had become widely known as a capable and thoughtful worker when in 1897 he was appointed the first medical officer of health and school medical officer for Northamptonshire. Here there was a clear field for his energies, though he had to contend with the opposition of those who regarded a county medical officer as an unnecessary luxury. His manner and methods were well calculated to overcome such obstacles. Modest to a degree, he soon became popular among all classes, whilst his enthusiasm for improvement did not narrow his outlook on the problems to be faced. He was especially interested, perhaps, in the welfare of infants and children, and it is a tribute to his efforts that the infant mortality of the county decreased during his term of office from 159 to 52 per 1000 births. During the same period the general death-rate fell from 15·57 to 11·37. Mr. Paget's annual reports were always lucid, and he wrote a number of useful reports on special subjects, notably fevers, besides editing the lectures of his father, with a memoir. He resigned his appointment last year, and was succeeded by Dr. Meredith Davies. Soon after his retirement he was elected an honorary member of the Association of County Medical Officers of Health, and this recognition of his work, he said at the time, gave him the greatest pleasure of his life.

Mr. Paget married Ethel, daughter of Canon W. H. Brandreth, and she survives him. Their only child, Lieut. G. G. B. Paget, of the Northamptonshire Regiment, was killed in action in 1914.

CHARLES SAMUEL BREWER, O.B.E., L.R.C.P. EDIN.

Dr. C. S. Brewer, who had been in poor health for seven or eight years, died on Sept. 7th at his home in Birkenhead. Most of his life was spent in that neighbourhood, for after studying at the Liverpool School of Medicine he was appointed house surgeon at the Birkenhead Borough Hospital, and soon afterwards took over a practice in the town, where he remained for the rest of his life. His period of active practice was nearly forty years, but was interrupted for a time by the late war, during which Dr. Brewer served as staff-surgeon on H.M.S. *Eaglet*, with the rank of Surgeon Lieut.-Commander, R.N.V.R. He was made an Officer of the Order of the British Empire in recognition of his services. On returning to Birkenhead he resumed the prominent place that he had gained in local affairs, and even after his retirement a few years ago continued to do a great deal to promote infant welfare and other public work. He was a leading Freemason and served for several years on the Birkenhead Town Council. He leaves a widow.

Correspondence.

"Audi alteram partem."

THE LABELLING OF EGGS.

To the Editor of THE LANCET.

SIR,—As a layman who has devoted the major part of his time during the last ten years to the study of eggs, from their dietetic value as a life-giving food, their commercial aspect and their exhibition merits, I should like to endorse and amplify the remarks made by Dr. E. G. Annis in your issue of Sept. 3rd, and previous letters upon this subject.

The intrinsic food value of eggs is not sufficiently known or appreciated by the British public. Until they can obtain new-laid eggs with assurance and confidence that the article purchased is genuinely as represented, so long will the position remain in statu quo—a national scandal. In common justice the consumer has a right to know what he is buying. This obligation has not yet been recognised. The extent to which foreign eggs are being mixed with English is appalling.

Nature ordained that at least one indispensable article of food should be provided for our use safe from the machinations and evil ingenuity of man to adulterate, hence eggs are contained in sealed packets. Yet this very safeguard is utilised as a convenient cloak by the unscrupulous to shelter their deliberate delinquencies. The solution of the problem lies in two directions.

First, legislative assistance is needed—all imported eggs must be marked with their country of origin. It must be enacted that it is illegal to offer for sale bad eggs and stale eggs for new-laid eggs or fresh. Secondly—as producers, men of acumen, acknowledge —there must be a complete reorganisation of marketing and adoption of standard grades. Soiled or dirty eggs must be eliminated. It is easy to see through the objections raised against the marking of imported eggs.

As far as the cost is concerned, the Minister of Agriculture informs us that estimates range from one-seventh of a penny to one penny per dozen; a mere trivial matter in comparison to health, and the cost would fall upon the importer. Poultry keepers do not fear the fair competition of imported eggs, but they do object to the unfair competition produced by mixing and selling these eggs as English new-laid.

I am, Sir, yours, faithfully,

JAMES GATECLIFF.

24, Minnis Bay, Birchington-on-Sea, Sept. 13th, 1927.

MULTIPLE CAVERNOUS ANGIOMATA OF THE SWEAT DUCTS.

To the Editor of THE LANCET.

SIR,—The interesting case recorded by Dr. B. W. Crowhurst Archer in THE LANCET of Sept. 17th (p. 595) recalls numerous descriptions of what may be termed "telangiectasia" of the skin and mucous membranes, whether familial or non-familial, and whether or not accompanied by special tendency to hæmorrhage. I have referred to many such cases in an article entitled Developmental Telangiectatic Hæmorrhage and So-called Telangiectasia.[1] But the case which, in regard to the extensive distribution on the trunk, it seems most to resemble was omitted from my list —namely, the one published under the heading Angiomatosis Miliaris by L. Steiner and H. Voerner.[2] Nevertheless, there are apparently many points of difference between the two cases.

I am, Sir, yours faithfully,

F. PARKES WEBER, M.D.

London, W., Sept. 17th, 1927.

[1] British Journal of Children's Diseases, 1924, xxi., 198.
[2] Deut. Arch. f. Klin. Med., Leipzig, 1909, xcvi., 105.

STIMULANTS OF THE UTERUS.

To the Editor of THE LANCET.

SIR,—In your leading article in THE LANCET for Sept. 10th with this heading there appears to be a certain confusion in the mind of the writer as to the identities of the alkaloids of ergot, ergotamine and ergotoxine.

Although it is clear that the experiments made by the authors, whose work is under review, were carried out with ergotamine in the form of ergotamine tartrate, and that their conclusions are based on the results obtained with this salt, your leader writer appears to consider that the pharmacological similarity between the two alkaloids entitles him, by an analogical process of reasoning, to substitute the word "ergotoxine" for "ergotamine" throughout.

We desire to make it clear that there are fundamental differences between ergotamine and ergotoxine. Ergotamine differs from ergotoxine in its chemical composition. Ergotamine is a crystalline substance, whereas ergotoxine has always been described as being amorphous. Ergotamine yields pure crystalline salts suitable for clinical use, and ergotamine tartrate, under the name of Femergin, has been available in unlimited quantities, and extensively used, for a considerable time. The abundant clinical evidence which proves that ergotamine is a powerful and reliable agent appears to be singularly lacking for any other constituent of ergot.—I am, Sir, yours faithfully,

J. FLINT,
Manager, "Sandoz" Scientific and Research Department.

5, Wigmore-street, London, W. 1, Sept. 15th, 1927.

*** Mr. A. Bourne and Dr. J. H. Burn, when discussing the physiologically active substances in ergot, say (*Journal of Obstetrics and Gynæcology of the British Empire*, XXXIV., No. 2, p. 259): "These are (1) the specific alkaloid of ergot, (2) histamine, (3) tyramine. The specific alkaloid of ergot is known as ergotoxin, in which form it was originally isolated by Barger and Carr, and as ergotamine, a pharmacologically identical and crystalline substance isolated by Stoll." In their summary (p. 267) it is stated: "The specific alkaloid of ergot (ergotamine or ergotoxin) exerts a very prolonged action, and appears to be an ideal agent for use after delivery." The leading article to which the above letter refers was designed not to discuss any particular preparation but, in a general way, the specific alkaloid of ergot.—ED. L.

MEDICAL LITERATURE FOR KENYA COLONY.

To the Editor of THE LANCET.

SIR,—With reference to the letter appearing under the above heading in your number of June 4th last (p. 1205), the Branch Council of the Kenya branch of the British Medical Association desires to express strongly its disagreement with the statement made therein, that the medical practitioners of Kenya would gratefully welcome gifts of fairly up-to-date books on medicine and surgery.

The fact is that the medical department of the colony maintains a medical reference library which is accessible to all doctors in the colony. This contains all the best of the most recent medical publications and takes in the majority of the standard medical and scientific journals published to-day. Furthermore, it is probable that the private libraries of medical men in this colony would compare favourably with those of their professional brethren at home.

While grateful for the suggested vicarious generosity of the President of the Victoria League, my Branch Council fears that the statement that medical practitioners in this colony feel a pressing need for text-books of medicine and surgery may be misconstrued into a reflection on their professional efficiency.

I am, Sir, yours faithfully,

J. B. CLARKE,
President, Kenya Branch, British Medical Association.

Nairobi, August 24th, 1927.

CHARLES CREIGHTON.

To the Editor of THE LANCET.

SIR,—May I express my gratitude to Prof. William Bulloch for his remarkable appreciation of a remarkable man contained in THE LANCET of July 30th. No one who has read that scholarly book "The History of Epidemics in Britain" (not *Great* Britain) or who has had occasion to study Creighton's translation of Hirsch's "Handbook of Geographical and Historical Pathology" can fail to have acquired a feeling of respect and admiration for their author—a feeling which the pathetic story of his life, so vividly portrayed by Prof. Bulloch, serves to intensify.

Dr. Charles Creighton was the last of the great miasmatists, and his passing marks the end of an era which, starting some 2000 years ago, gave us Sydenham and a distinguished band of medical philosophers. It is, however, not possible to account for the attitude of detachment adopted by Creighton towards the discoveries of Pasteur and Koch, but, as Prof. Bulloch hints, it may be that modern epidemiologists, as the result of discarding the spirit as well as the letter of his message, have failed to do full justice either to him or to themselves. "We have thrust," wrote Sir Clifford Allbutt, "ancient myth and symbol too much aside as wholly fanciful; we are discovering now that they are apparitions, luminous mists of truth—the edges and bordering lights growing in form from one incarnation to another."

This view, I take it, represents in graceful literary form the standpoint of Creighton, and it may be that the day is not far distant when it will be recognised that the miasmatic concept does, after all, correspond with something in nature. In the meantime it is pleasing to learn that the anxieties of his latter days were relieved by an unsought civil pension—a gift equally honourable to the donor as to the recipient.

I am, Sir, yours faithfully,

C. A. GILL,
Lt.-Col., I.M.S.

Simla, India, Sept. 1st, 1927.

DEATH CERTIFICATION.

To the Editor of THE LANCET.

SIR,—It is clear that the majority of us have by this time experience of the new form of death certification; but it is strange to me that it seems so far to have escaped criticism. Apart from the form of certificate and the suggested procedure descriptive of the mode of death, both susceptible of improvement, there is a pitfall for the ingenuous in the mode of certifying. The certificate is to be delivered personally—or it may be posted—by the certifier to the registrar of the subdistrict in which the death occurred. What does this imply? To the ingenuous privacy. He would suppose that having excluded the family circle he should proceed with complete frankness to describe the mode of death along with its every contributory factor. For example:—

(*a*) Hæmatemesis.
(*b*) Cirrhosis of liver.
(*c*) Chronic alcoholism.

With what result? That an outraged relative may confront him the same evening with a copy obtained from the registrar! I make no comment; but I submit that the fact must be recognised.

And then, as to the registrar—his name? address? hours of attendance? These are not necessarily an easy discovery, for they may entail the assistance of postal, or municipal authorities, or of undertakers or any other informed and obliging people. My own practice, for example, happens to lie in not less than six different boroughs; and it is my duty to ascertain when necessary the address of a registrar in, for all I know, any one of a dozen or perhaps a score of subdistricts. What is to be *done* about such things? It may be possible that some of your correspondents can make suggestions; in any case the matter is susceptible of discussion and I should hope of remedy.

I am, Sir, yours faithfully,

PRACTITIONER.

Sept. 12th, 1927.

ESTABLISHMENT OF BREAST-FEEDING IN A BABY SIX WEEKS OLD.

To the Editor of THE LANCET.

SIR,—Since the Chelsea Mothers' Home was opened two years ago some very encouraging results have been obtained, and we have become accustomed to see breast-feeding re-established after a considerable interval. The following recent case was, however, so unusual that it seems worth recording.

Baby D. S. was born on July 16th, 1927; the birth weight was reputed to have been 12 lb. The child was put to the breast in the usual way, but no milk appeared in the mother's breasts by the third day. The midwife then stated that further efforts to suckle the child would be useless; on her advice the child was removed entirely from the breast and artificially fed. Condensed milk, various dried milks, and a proprietary food were tried in turn. Under this régime the child lost weight.

The mother and child were admitted to the Chelsea Mothers' Home on August 25th. Baby D. S., then six weeks old, weighed 10 lb.—i.e., 2 lb. less than the birth weight. The infant was put to the breast three-hourly, and given a modified dried milk mixture as supplementary feeding to bring the total food up to 20 oz. per diem. On the first day the child sucked only ¾ oz.; a further ¼ oz. was expressed from the breast, making a total of ¾ oz. of breast-milk. On the second day the amounts respectively were ½ oz. and ½ oz.; and on the third day the total breast-milk was 2½ oz. At the end of a week the amount of breast-milk had risen to 10¾ oz. per diem. On the twelfth day this figure had risen to 21½ oz., and on the following day mother and child were discharged, the infant being then fully breast-fed and weighing 10 lb. 9½ oz.

This surprising result was attributable to the excellent management of the case by the matron, and to the faith of the mother, who quite expected that breast-feeding would be fully established in four days.—I am, Sir, yours faithfully,

NORAH D. PINKERTON, M.B., B.S. Lond.,
Medical Officer, Chelsea Health Society.

Sept. 20th, 1927.

THE TREATMENT OF EPILEPSY.

To the Editor of THE LANCET.

SIR,—It seemed to me a pity that your comprehensive article on epilepsy did not go still further and point out how lacking are the facilities for treating case of psychogenic origin. The fact that ordinarily the general hospitals are content to act as stepping-stones in the course of the epileptic towards the workhouse makes adequate treatment often impossible. If they had psychotherapy departments, working in connexion with occupation or handicraft centres, much good might be done. The doctors and parents would know where to send these cases for early treatment, which, in the majority of instances, is more than half the battle. The epileptic colony, of course, is the ideal, but I am afraid at present it does not come within the range of practical politics.

I am, Sir, yours faithfully,

Plymouth, Sept. 20th, 1927. E. L. FOX, M.D.

ISOLATION WARDS AT LAMBETH HOSPITAL.—The lack of isolation wards at the Lambeth Hospital has again been discussed by the Lambeth Board of Guardians following the receipt of a letter from a coroner alleging delay in the removal of a diphtheria patient and who died while being transferred to the South-Western Fever Hospital. The Ministry of Health wrote expressing regret that the guardians should think of postponing, even for six months, the consideration of providing isolation wards, and a member of the board gave notice that he would move a resolution on the subject at the next meeting. The delay in securing the removal of the patient is stated to have been due to a misunderstanding on the part of the telephone operator who did not appreciate the urgency of the call.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. J. S. Austin is appointed to the Royal Hospital at Bermuda.

Surg. Lt. G. W. Garde to *Virid*, for R.N. Hospl., Plymouth.

ROYAL ARMY MEDICAL CORPS.

Maj.-Gen. Sir M. W. O'Keeffe, K.C.M.G., C.B., retd. pay, late R.A.M.C., is apptd. Col. Comdt., vice Lt.-Gen. Sir A. Keogh, G.C.B., G.C.V.O., C.H., retd. pay, late R.A.M.C.

Capt. L. M. Rowlette to be Maj. (Prov.).

ARMY DENTAL CORPS.

Temp. Lt. D. W. N. Squires, Dental Surg., Gen. List, to be Lt.

TERRITORIAL ARMY.

Lt. W. Morrison, late R.F.A. (Spec. Res.), to be Lt.

ROYAL AIR FORCE.

J. M. Ritchie is granted a short service commission in the rank of Flying Officer for three years on the active list.

Flying Officer A. F. Cook is promoted to the rank of Flight Lieutenant.

Flying Officer M. D. Rawkins is transferred to the Reserve Class D. (ii.).

Wing Comdr. H. W. Scott to No. 21 Group Headquarters, West Drayton, for duty as Senior Medical Officer.

Squadron Leader (Dental) A. K. Macdonald to R.A.F. Depôt, Uxbridge, on appointment to a Temporary Commission.

Flight Lt. E. G. Howell to R.A.F. Depôt, Uxbridge.

Flying Officers G. T. O'Brien and Patrick O'Callaghan to Research Laboratory and Medical Officers' School of Instruction, on appointment to Short Service Commissions.

INDIAN MEDICAL SERVICE.

Lt.-Col. S. R. Christophers, C.I.E., O.B.E., to be Hon. Physician to the King, Ind. Mil. Forces, and to be Bt. Col., vice Col. C. H. Bensley, C.I.E. (retd.).

Maj.-Gen. G. Tate to be Hon. Surg. to the King, Ind. Mil. Forces, vice Maj.-Gen. R. Heard, C.I.E. (retd.).

Lts. to be Capts.: R. Linton, A.Tait, and J. F. Shepherd.

Maj. A. Seddon is transferred to the temp. non-effective list.

J. F. O. Bodman to be Lt.

DEATHS IN THE SERVICES.

Lieut.-Colonel Frederick William Wright, I.M.S. (retd.), D.S.O., who died recently at the age of 77, was born at Norwich, and was the son of Robert John Wright of that city. Educated at Bedford and at Lausanne, he graduated in medicine and surgery at the University of Edinburgh in 1872. He entered the Bengal Medical Service in 1873, and became Surgeon-Lieut.-Colonel in 1893. In the Afghan War of 1878 he was with Lord Roberts in the forced march from Kabul to Kandahar, and was present at the subsequent battle (medal with Kandahar clasp and the bronze star). Later, in 1886–87, he took part in the Burmah operations which added Upper Burmah to the Indian Empire (mentioned in despatches, medal with two clasps and the D.S.O.). He also served with the British contingent of the Expeditionary Force in China to put down the Boxer Rebellion in 1900 (medal), and in the Waziristan Campaign of 1901–02 (medal with clasp). In 1919 he was granted the Indian Army good service pension.

PRESENTATION TO DR. J. H. MARSH.—On Sept. 14th Dr. Marsh, J.P., medical officer of health for Macclesfield, was presented by his fellow practitioners with a corner cupboard and bookcase, one panel of which bears an illuminated inscription which reads as follows: "Presented to Dr. John Hedley Marsh, J.P., by the members and constituents of the County Palatine of Chester Local Medical and Panel Committees in recognition of his spirited leadership and of a decade of genial and judicious conduct in the chair." A beautiful chair also formed part of the gift, and Mrs. Marsh received a Japanese garden of miniature living trees, enclosed in an oval porcelain tray. The presentation was made by Dr. L. Grant, of Neston, Sir William Hodgson, J.P., chairman of the Cheshire County Council, presiding. Unfortunately, Dr. Marsh was prevented from being present in person owing to ill-health.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—On Fridays, Oct. 14th, 21st, and 28th, at 5 P.M., Sir Arthur Keith, F.R.S., will give demonstrations in the theatre of the College. The subjects will be: (1) Results of Recent Researches into the Reproduction and Growth of Bone; (2) Rheumatic and other Changes in Joints illustrated by specimens from the Strangeways Collection; and (3) Congenital Dislocation of the Hip and Congenital Dislocation of other Joints.

MAUDSLEY HOSPITAL.—A post-graduate course in psychiatry will be held at the Maudsley Hospital, Denmark-hill, London, S.E., during October and November. It will run concurrently with a course on Diseases of the Nervous System which is to be given at the National Hospital, Queen-square, W.C., from Oct. 3rd to Nov. 25th, and so far as possible times of lectures and demonstrations have been arranged to enable practitioners to attend both courses. Details may be had on application to the medical schools of the two hospitals.

UNIVERSITY COLLEGE HOSPITAL.—In Covent Garden Market on Wednesday last an auction and flag day was held with the object of helping to reduce the debt of University College Hospital to its bankers, £30,000 of which must be cleared off this year. Many well-known firms sent articles for the sale, and a souvenir catalogue was prepared by the Chairman of the Appeal Committee, Mrs. Joseph Gluckstein, M.B.E., J.P. Miss Melville, the leading lady at the Winter Garden Theatre, opened the sale, and Sir Alfred Butt and the directors of Drury Lane Theatre, Mr. W. G. Irving, the market superintendent for the Beecham Estates, and many leading firms in the district gave their hearty support.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures will be delivered in the lecture hall of the Institute, 37, Russell-square, London, W.C., on Oct. 17th, 18th, and 20th, at 4 P.M., by Prof. R. Bruynoghe, of the University of Louvain. His subjects will be the Twort-d'Herelle Phenomenon, and some New Research on Relapsing Fever.—The annual congress of the Institute for 1928 will be held at Dublin.—A course of lectures on the Health of the Nation will be given at the Institute during the next three months on Wednesdays, at 4 P.M. The programme is as follows: Oct. 12th, Sunlight for Childhood (Dr. C. W. Saleeby); Oct. 19th, Tuberculosis as a Social Disease (Prof. Lyle Cummins); Oct. 26th, Diseases conveyed to Man from Animals (Prof. F. T. G. Hobday); Nov. 2nd, Tuberculosis as a Problem of Childhood (Sir Henry Gauvain); Nov. 9th, the Present Situation in regard to Housing (Lt.-Col. F. E. Fremantle); Nov. 16th, the Milk-supply (Dr. Stenhouse Williams); Nov. 23rd, the Prevention of Heart Disease (Dr. Dingwall Fordyce); Nov. 30th, the Prevention of Cancer (Prof. Blair Bell); Dec. 7th, the Health of the Public School Boy (Dr. L. R. Lempriere); and Dec. 14th, the Changed Conditions of Quarantine (Prof. E. W. Hope).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A fortnight's course at the National Hospital for Diseases of the Heart will begin on Oct. 3rd. It will consist of lectures, demonstrations, ward rounds, and out-patient work from 10 A.M. to 4 P.M. each day and the entry is limited to 20. The Central London Throat, Nose, and Ear Hospital will hold a three weeks' course from Oct. 3rd to 22nd. It will be in two parts—clinical and operative—which may be taken separately or together. The clinical course will occupy each day from noon to 5 P.M., with operations at 9 A.M. most mornings, whilst the operative class (entry limited) will be held from 10 A.M. to 11.30 A.M. There will also be a practical course in peroral endoscopy and a course in bacteriology and pathology; the entry to these will be strictly limited. The subjects of other courses in October will be antenatal work at the Royal Free Hospital, consisting of demonstrations to not more than ten post-graduates at 5 P.M. on Fridays, Oct. 7th to 28th; diseases of children, at the Paddington Green and the Victoria Children's Hospital, morning and afternoons alternately at each hospital from Oct. 17th to 29th; electrotherapy at the Royal Free Hospital on Wednesdays at 5.15 P.M. from Oct. 12th to Nov. 2nd; gynæcology at the Chelsea Hospital from Oct. 17th to 29th; tropical medicine at the London School of Tropical Medicine on Tuesdays and Thursdays at 2 P.M. from Oct. 3rd to 29th; and a course in neurology at the National Hospital, Queen-square, from Oct. 3rd to Nov. 25th. Copies of all syllabuses and of the general course programme are obtainable from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1, and will be sent regularly to those who wish it.

Dr. John Beattie, demonstrator in anatomy at University College, London, has been appointed assistant professor of anatomy at McGill University, Montreal.

ROYAL DENTAL HOSPITAL.—On Tuesday, Oct. 4th, at 4 P.M., Sir Walter Fletcher, F.R.S., will open the John Hampton Hale Research Laboratory and will distribute prizes to students. The hospital, whose address is 32, Leicester-square, London, W.C. 2, will be open to visitors from 3 o'clock.

ROYAL VETERINARY COLLEGE.—Prof. J. Macqueen, F.R.C.V.S., has been elected to the office of Dean, and Mr. Tom Hare, M.D., B.V.Sc., M.R.C.V.S., of the Lister Institute, has been appointed to the Chair of Pathology. The winter session will begin on Oct. 4th, and the opening address will be delivered at 3 P.M. on that day by Mr. E. M. Crookshank. Women students are now admitted to the College and post-graduate courses will shortly be started.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—The annual dinner will be held on Wednesday, Oct. 12th, at 7 for 7.30 P.M., at the Trocadero Restaurant, Piccadilly-circus. Ladies are invited, and application should be sent to Dr. J. P. Purvis, 16, The Grove, Greenwich, S.E. 10.

BRITISH SOCIAL HYGIENE COUNCIL.—Major-General J. E. B. Seely will preside over the Imperial Social Hygiene Congress to be held at the Caxton Hall, Westminster, from Oct. 3rd to 7th. Among the speakers will be Mr. David Lees, Colonel L. W. Harrison, and Dr. H. Crichton Miller.

UNIVERSITY OF DURHAM.—Mr. R. B. Green, M.B. Lond., F.R.C.S. Eng., who for five years has held the position of lecturer in anatomy at the College of Medicine, Newcastle-on-Tyne, has been elected Professor of Anatomy in succession to Prof. R. Howden.

CITY OF LONDON HOSPITAL.—To liquidate its liabilities and carry out improvements planned as far back as 1914, at least £25,000 is needed by the City of London Hospital for Diseases of the Heart and Lungs. Though the total income last year was £34,474 and the expenditure was only £33,231, the sum of £9000 is due to the bank. The generosity of the Prudential Assurance Company has enabled the hospital to erect and equip a new pathological laboratory, but the country sanatorium at Saunderton has to remain closed for lack of funds.

DONATIONS AND BEQUESTS.—Mrs. Caroline Day, of Morley, Yorks, left £1000 each to the Women and Children's Hospital, Leeds, St. Dunstan's Hostel for the Blind, and Dr. Barnardo's Homes.—Mr. John Edwin Fyfield, High Barnet, N., on the death of his wife, left one-half of the residue of his property to endow a bed or ward in the Freemasons' Hospital, in memory of his son who was killed in the war.—Dr. John Storrs Brookfield, of Phillimore-gardens, Kensington, W., left £2000 to the University of New Brunswick, Canada, for a scholarship in natural science, and £100 each to the London Hospital, E., the Willesden Hospital, the Society for the Prevention of Cruelty to Animals, the Society for the Prevention of Cruelty to Children, and the rector of Upminster for the poor.—Mrs. Agnes Wood, of Walmer-place, Walmer, Kent, and formerly of Liverpool, besides other bequests left £5000 each to Halifax Infirmary, Royal Southern Hospital, Liverpool, Liverpool Queen Victoria District Nursing Association and Aged Merchant Seamen and Widows' Fund. In the event of the failure of certain trusts the residue falls to such charities as may be named in accordance with the provisions of the will.—Mr. Joseph Henry Farnworth, of St. Ives, Flixton, Lancashire, left £500 each to the Manchester Royal Infirmary, Ancoats Hospital, and Salford Royal Hospital and Dispensary.—Mr. George Frederick Moore, of Chardwar, Bourton-on-the-Water, Gloucestershire, left £2000 to the Bourton-on-the-Water Cottage Hospital.—The late Mr. Edwin Webster, of Birkdale, Southport, left property of the value of £35,390, with net personalty £32,591. He bequeathed real estate at Wibsey and Bradford to his wife for life, and then to the Bradford Infirmary. The residue of the property to his wife for life and then to be divided into 36 parts: Five for the Southport Infirmary, four for the London Missionary Society, three each for the Southport branch of the Society for the Prevention of Cruelty to Children and Dr. Barnardo's Homes; two each for the North of England Children's Sanatorium, Southport, the Southport Homœopathic Cottage Hospital, the Southport Hydropathic Hospital, and other charities, and one for St. Dunstan's Home for the Blind.—Mr. Thomas Hutchinson Russell, of Sowerby, nr. Thirsk, Yorks, left £1500 to the Lambert Memorial Hospital, Thirsk, and £1000 each to the Leeds General Infirmary and the Yorkshire County Hospital, York

ST. MARY'S HOSPITAL POST-GRADUATE COURSE, 1927.—This course will be held this year as usual during the week-end preceding the autumn session. On Saturday, Oct. 1st, at 11 A.M., Prof. C. A. Pannett will speak on Minor Orthopædic Problems of General Practice. The other lectures to be given on that day are as follows:—12 noon: Treatment of Pernicious Anæmia, by Sir William Willcox; 2.15 P.M.: Cæsarean Section and After, by Mr. T. G. Stevens; 3.15 P.M.: How to Deal with Retention of Urine in an Old Man, by Mr. Zachary Cope. On Sunday, Oct. 2nd, at 10.30 A.M., Dr. Ernest Young will lecture on the Use of the Duodenal Tube in Treatment of Gastric and Duodenal Ulcers; at 11 A.M. Dr. C. M. Wilson will speak on Early Recognition of Some Common Diseases; and at noon Dr. John Freeman will discuss When to Use and What to Expect from Blood Transfusion. On Monday, Oct. 3rd, at 11 A.M., Dr. Wilfred Harris will lecture on the Significance of Pain in the Lower Extremities and its Treatment. On the same day, at noon, Mr. S. Maynard Smith will lecture on Obstruction of the Large Bowel. In the afternoon lectures will be given, illustrated by lantern slides, by Mr. Aleck W. Bourne on Recent Work on the Pituitary and Ovary (2.15 P.M.), and Mr. Duncan Fitzwilliams on Early Diagnosis of Carcinoma of Tongue (3.15 P.M.). These meetings are open to all medical practitioners without fee. They will be held in the library of the Medical School, except those on Monday afternoon, which will be given in the Unit Theatre, Beverly Ward.

LORD MAYOR OF LIVERPOOL'S APPEAL.—So far the Lord Mayor of Liverpool has received £21,956 8s. 6d. in response to his appeal for £60,000 for the Liverpool medical charities.

PEOPLE'S LEAGUE OF HEALTH.—A series of ten Sims Woodhead lectures will begin on Thursday, Oct. 13th, at 6 P.M., in the lecture room of the Medical Society of London. Among the lecturers will be Prof. H. E. Roaf, Mr. E. B. Turner, Dr. J. Sim Wallace, Dr. H. Gardiner-Hill, Prof. M. S. Pembrey, F.R.S., Prof. B. Collingwood, Dr. T. Beaton, and Dr. H. Crichton Miller. Further particulars and syllabus will be supplied by Miss Olga Nethersole, 12, Stratford-place, W.

Appointments.

CAIRNS, MARGARET D., M.B., Ch.B. Edin., has been appointed Medical Officer of Health for the Burgh of Stirling.

CUFF, A. W., M.B. Camb., F.R.C.S. Eng., Consulting Surgeon to the South Yorkshire Mental Hospital, Sheffield.

JOHNSTONE, A., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health for Greenock.

JONES, L. W., M.B., B.Chir. Camb., M.R.C.S., Medical Officer and Public Vaccinator for No. 2 District of the Union in Anglesey.

PITTARD, M., M.R.C.S., L.S.A., State Medical Officer of the Island of Sark.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Jun. Asst. Ophth. S.
Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.
Belgrave Hospital for Children, Clapham-road, S.W.—H.P., Asst. H.P., and H.S. Each at rate of £100.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £100 and £50 respectively.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Asst. Out-patient Reg.
Devonport, Royal Albert Hospital and Eye Infirmary.—H.S. £150.
Dundee Royal Infirmary.—Asst. S.
Durham County Council, &c.—Dist. Tub. M.O., &c. £500.
Exeter, Royal Devon and Exeter Hospital.—H.P. Also Cas. O. At rate of £130 and £100 respectively.
Freetown, Sierra Leone, Liverpool School of Tropical Medicine Laboratory.—Two Research Assts. Each £600.
Gravesend and North Kent Hospital, Kent.—Jun. H.S. £150.
Grosvenor Hospital for Women, Vincent-square, S.W.—Hon. Anæsthetist.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Anæsthetist. Also Res. M.O. and H.P. At rate of £150 and £100 respectively, and Med. Reg. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Jersey General Hospital and Poor-Law Infirmary.—Res. M.O. £200.
Jewish Health Organisation of Great Britain.—M.O. to Psychological Clinic. £1 10s. per session.
Kolar Gold Field Hospital, South India.—3rd Asst. M.O.
Leeds City.—Asst. Clin. Tuberculosis O. £600.
Liverpool, Mill-road Infirmary, and Smithdown-road Institution.—Res. A.M.O.'s. Each at £200.
London Hospital, E.—Asst. P. Also 1st Asst. and Reg. to one of the Med. Firms, and 1st Asst. and Reg. to one of the five Surg. Firms. Each £300.
London Temperance Hospital, Hampstead-road, N.W.—Clin. Asst., Ear, Nose and Throat Dept.
Middlesex Hospital Medical School, London, W.—2nd Demonstrator for the Dept. of Physiology.
National Dental Hospital, Great Portland-street, W.—Hon. Anæsthetist.
Newcastle-upon-Tyne Hospital for Sick Children.—Jun. H.S. At rate of £100.
Otago University and Dunedin Hospital, New Zealand.—Sen. Res. Surg. O. £500.
Paddington Green Children's Hospital, London, W.—H.P. At rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—H.S.'s and H.P.'s. At rate of £120 and £90 respectively.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two H.P.'s. Each at rate of £100.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rotherham Hospital.—H.P. £180.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Jun. H.S. £100.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. At rate of £150.
St. George's Hospital, S.W.—Asst. Radiologist. £100.
St. Mark's Hospital for Cancer, City-road, E.C.—Radiologist.
St. Mary, Islington, Infirmary, Highgate Hill, N.—Radiographer. Guinea per day.
St. Thomas's Hospital.—Asst. Pathologist in Venereal Dept.
Scottish Board of Health.—M.O. £600.
Seamen's Hospital, Albert Dock, Connaught-road, E.—Ophthalmologist.
Shrewsbury, Royal Salop Infirmary.—Sec. Supt. £600.
Smethwick County Borough.—Asst. M.O. and Sch. M.O. £600.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Asst. Ophth. S.
Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.
Warwickshire and Coventry Joint Committee for Tuberculosis.—Asst. Tuberculosis O. £650.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Sen. and Jun. Non.-Res. H.S.'s. At rate of £150 and £100 respectively.
Willesden General Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Cardenden (Fifeshire), Festiniog (Merionethshire), Ripon (York, West Riding), St. Mary's (Isles of Scilly), Breage (Cornwall), and Beith (Ayrshire).

Births, Marriages, and Deaths.

BIRTHS.

BHANDARI.—On Sept. 15th, at "Old Court," Hanger-lane, Ealing, the wife of Dr. P. C. Bhandari, of Brentford, of a daughter.

BUCKLEY.—On Sept. 15th, at Kensington, the wife of Major C. D. M. Buckley, *M.C.*, R.A.M.C., of a son.

STUART.—On Sept. 14th, at Lowestoft, the wife of Surg.-Lieut. A. P. Anderson Stuart, R.N., of a daughter.

MARRIAGES.

BOWLES—GREAVES.—On Sept. 19th, at St. Stephen's Church, Rosslyn-hill, N.W., Roger Vincent Bowles, M.R.C.S., L.R.C.P., to Florence Maud Evelyn Greaves, elder daughter of Mr. and Mrs. Edwin L. Greaves, of Keats Grove, Hampstead, N.W.

LYDON—ANDERSON.—On Sept. 15th, at Sheffield, Francis L. Lydon, M.B., Ch.B., of Galway, to Helen Anderson, M.B., Ch.B., of Galway.

ORR—BENTALL.—On Sept. 15th, at Chapel-street Congregational Church, Southport, Ian Morison Orr, M.B., Ch.B., to Marjorie Violet, daughter of W. C. Bentall, O.B.E., F.R.C.S.E., and Mrs. Bentall, Oxford-road, Birkdale, Lancs.

PARRY—GRIFFITHS.—On Sept. 13th, at Tredegarville Baptist Church, Owen Brynog Parry, M.B., B.S. Lond., of Ninian-road, Cardiff, to Constance Lilian Griffiths, M.B., Ch.B., B.Sc., of Richmond-road, Cardiff.

DEATHS.

BREWER.—On Sept. 7th, at Fairview-road, Oxton, Birkenhead, Dr. Charles Samuel Brewer, O.B.E.

GAMGEE.—On the 16th inst. at Folkestone, Margaret, the dearly loved wife of Leonard Gamgee, F.R.C.S., 5, Norfolk-road, Edgbaston, Birmingham.

HARDWICK.—On Sept. 13th, at Richmond, Yorkshire, Harold George Cooke Hardwick, B.Chir. Camb., M.R.C.S., L.R.C.P., aged 64.

WRIGHT.—On Sept. 9th, suddenly, at Bournemouth, Lieut.-Colonel Frederick William Wright, D.S.O., I.M.S. (retd.), of Cromwell-road, South Kensington, aged 77.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE BIRTH OF MANKIND.

THE history of books which have had an influence upon knowledge is always interesting, particularly when we can trace the life of a book from its birth, throughout its life until its supersession or practical death. Such a pedigree is extant in the case of a book which had an enormous popularity in its day—namely, "The Birth of Mankind," or "The Woman's Book," the bibliography of which has been set forth at length by Sir D'Arcy Power in a paper read before the Bibliographical Society and which is now printed from the Transactions of the Society by the Oxford University Press. "The Woman's Book" first saw the light in 1513, when the Emperor Maximilian granted it copyright. The author was Eucharius Rosslin, city physician of Worms, and the original title was "Der Swangern Frauwen und Hebammen Roszgarten"—hence it has been colloquially known as "the Rosegarden." There was nothing particularly original in the book—it was an illustrated manual of midwifery compiled from ancient sources and mainly from Muscio's Latin version of Soranus's treatise on midwifery. Rosslin had an immediate success as an author, and his work was translated into Dutch in 1516, into Czech in 1519, into French in 1536, into Latin in 1532, and into English from the Latin in 1540, this version being the earliest known work in the English tongue on midwifery. The English translator was one Richard Jonas, of whom practically nothing else is known, and he dedicated his labours to "the most excellent vertuous Lady Quene Katheryne wyfe and most derely belouyd spouse unto the moste myghty sapient Christen prynce King Henry the VIII." It is a sad comment upon the vanity of human affairs to remember that two years later the head of the most excellent virtuous Lady Catherine Howard was cut off in the Tower by command of the most mighty Christian prince. In 1545 a new edition appeared enlarged and edited by Thomas Raynoldes, whose name appears on the title page of every successive edition until the last, that of 1654. There seems some doubt as to who he was, but he describes himself on the title page of the 1545 edition as "phisition." Sir D'Arcy Power takes his readers through the various editions and gives full bibliographical details of them and also reproduces many of the title pages. He also gives biographical particulars of the various printers and publishers. Thomas Adams, who published the 1604 and 1613 editions, was the son of a yeoman of Nyensavage, in Shropshire, a place which Sir D'Arcy Power cannot identify; there are two villages of the name "Neen" as now spelled, in Shropshire—namely, Neen Savage and Neen Solars, respectively east and south-east of Ludlow.

Other information about the book, not only bibliographical, appeared in THE LANCET for Nov. 22nd, 1924, in the Lloyd Roberts' Lecture delivered by Dr. Herbert Spencer.

TINEA CRURIS.

To the August number of the *Indian Medical Gazette* Lieut.-Colonel H. W. Acton and Dr. C. McGuire contribute a scholarly paper on Tinea Cruris, its Manifestations, Diagnosis, and Treatment, which covers a much wider field than its modest title suggests. It is a mistake, as they point out, to suppose that the ravages of the fungus responsible for dhobie itch are confined to the groin, for they are just as common on the feet and perhaps on the hands as well. This fact has been recognised by dermatologists for some time past, and the diagnosis of "gouty eczema" of the feet is a great deal less common than it used to be. In India eczematoid ringworm of the extremities and ringworm of the groin are often seen both in Europeans and Indians of all classes. Colonel Acton and Dr. McGuire believe that both forms are caused by the same fungus, *Epidermophyton inguinale*, which they also regard as responsible for many cases of cheiropompholyx. Moisture, heat, and friction are rightly considered predisposing and aggravating causes, and there is much to be said for the statement that many persons with no obvious sign of infection carry the nidus of it about with them in the interdigital space between the fourth and fifth toes, where it may lie dormant during residence at a hill station or in a temperate climate until the heat of the plains causes it to flare up again. The same sequence of events has often been noted in this country.

Several excellent photographs illustrate some of the clinical types of the disease, which are discussed in detail in the text, together with their common pyogenic complications. The mycology, methods of cultivation, and morphology are carefully recorded and illustrated by half-tone and coloured pictures. The histopathology, which explains the clinical types of the various lesions, is methodically examined, whilst the comments on treatment and prophylaxis will be useful to all who come across the protean manifestations of this troublesome infection.

THE TREATMENT OF DRUG ADDICTS IN PRISON.

A DRUG addict, against whom there were no previous convictions, was sentenced at Marlborough-street police-court on Sept. 17th to three months hard labour on each of four charges of obtaining money by false pretences with intent to defraud. Mr. Mead, the police-court magistrate, wisely made these terms of imprisonment consecutive and not concurrent, observing that it was quite possible that a year's imprisonment might effect a cure of the drug habit. He also stated that he appreciated that the sudden cessation of the drug might be serious for the defendant, and he would therefore draw attention on the commitment to the question whether it might not be considered necessary for the accused, subject to medical orders, to have discreet doses. But this, surely, is a question which may safely be left to the unfettered discretion of the medical officer of the prison, provided that the latter is fully informed (as he should be) of the history of the case. Judicial assistance in the prescription of medical treatment seems as unnecessary in the case of morphia addiction as it would be in the case of delirium tremens; moreover, the medical officer of a prison, administering a drug in the course of the proper treatment of a prisoner, requires no protection from the penal sections of the Dangerous Drugs Acts. The treatment of drug addicts in prison has presumably not yet necessitated any general instructions; the latest annual report of the Prisons Commissioners is silent on the subject. Nor is it known whether the Home Office has addressed any circular to magistrates to emphasise the value of a longer rather than a shorter sentence in such cases.

In the recent proceedings at Marlborough-street the accused was described as independent and his age was given as 42. He had served in the army in 1914 with credit and had relinquished his commission in 1915 on account of ill-health. He was stated to have been bankrupt four times. His offences were those of defrauding tradespeople by worthless cheques for small amounts. He informed the police that he had been ill for five years, was a drug-taker, and had been under the care of two doctors. A detective-sergeant from New Scotland Yard said that one of the doctors had been interviewed and had stated that the accused had been a drug addict for several years; he would still require treatment and his supply of morphia should be cut down gradually. A medical certificate was put in to the effect that the defendant had been a drug addict for years and that this condition had in all probability affected his moral sense. There seems to have been no suggestion of the accused obtaining supplies of morphia concurrently from more than one practitioner; indeed, the circumstances of the case did not involve reference to the Dangerous Drugs Acts or Regulations. The accused pleaded "Guilty" to the charges, and the task before the court was to decide the best means of protecting the community from the accused and protecting the accused from himself.

THE STANDING NURSE.

To the Editor of THE LANCET.

SIR,—I feel sure there is no foundation for the charge contained in Dr. T. F. G. Mayer's letter on this subject in THE LANCET of Sept. 17th (p. 636). In hospitals the health of the nurses is carefully considered and they are encouraged to sit at their work when possible. It is the rule for nurses to sit when giving light treatment. In all the nursing homes I know the nurses are certainly not required to stand unnecessarily. I cannot imagine any nurse being so stupid as to stand when giving prolonged treatment which can be efficiently carried out when seated. It must be so uncomfortable for the patient!

Nurses must be getting rather tired of other people "taking up the cudgel" on their behalf. Most of them are modern girls and are quite capable of looking after themselves. There is very little unemployment amongst them, and if a nurse finds her condition of work intolerable she is practically certain of being able to obtain another post. The only people who may have difficulty in finding employment are the elderly, unfit, and the partially trained.

I am, Sir, yours faithfully,

Sept. 20th, 1927. MATRON.

To the Editor of THE LANCET.

SIR,—It was with great interest that I read Dr. Mayer's letter in your last issue calling attention to the often very unnecessary standing by nurses in carrying out medical or nursing treatment. As a practical nurse and one holding authority for many years, I have found it impossible to ignore the fact that this matter calls for serious attention if efficiency of the worker is to be maintained. I am in close touch with many of my colleagues of older years who are

debarred from many forms of exercise entirely owing to varicose veins developed and "neglected" during their training.

If only some of the scientific management and intelligent care of the employees applied by leading industrialists could be brought to bear in hospitals, the result would be a healthier body of workers and a much more efficient service. One does not wish to overlook the fact that in a busy ward of a hospital the demands of many patients allow of practically no time whatever for sitting, also that continued practice in standing enables us to stand the strain better than many who have chosen other walks in life; but it is wasteful, unintelligent, and shortsighted to stand, if the same degree of efficiency can be attained by sitting. Many nurses fear to sit lest their patients should think they were relaxing unnecessarily, for many patients feel they are not being nursed unless the nurse is unceasingly active, quite forgetting the strain of responsibility and certain tension of mind the nurse is always aware of in connexion with her patient.

It would be a great help if in giving direction to a nurse, the medical man would indicate that certain treatment could be carried out while the nurse was sitting. This would reassure the patient that there was no negligence and would also "train" the nurse to husband her strength, a training which up to now has not been emphasised in our schools.

I am, Sir, yours faithfully,

Sept. 20th, 1927. PUBLIC HEALTH NURSE.

THE SHIPPING EXHIBITION AT OLYMPIA.

AT the Shipping Exhibition that opened at Olympia on Sept. 8th and continued for a fortnight there were fewer exhibits of interest to the seafaring hygienist than there were last year. There were two fans with "runners" like the well-known Sirocco—namely, the Capell (on the same axle as its driving steam turbine) and the Mawdsley (electric driven). Messrs. Siebe and Gorman had a diving exhibit and showed several patterns of outfit for men who have to work in dangerous gases or in fire. There was a model of a diver who carries with him the air for his own breathing, so that he has not to bother with a pump or that further cause of anxiety, an air-pipe. He cannot, of course, work for long spells or at great depths, but could leave a submarine, if she were checked at ten fathoms or less, and seek for the obstruction, re-entering the water-lock through which he had left the boat. This lock being then closed to the sea and freed from water by compressed air, the diver would be gradually decompressed according to the rules and received back among the crew. This firm showed also a glass-sided tank in which a diver gave exhibitions of cutting iron, under water, with the oxy-acetylene blowpipe.

THE ACTION OF LIQUID PARAFFIN ON THE BOWEL.

IN order to decide what is the action of liquid paraffin upon the fæces Dr. E. Schlagintweit, of Munich, has undertaken a series of experiments on white mice, and describes them in the *Münchener Medizinische Wochenschrift* of April 22nd. Paraffin, when introduced into the stomach in whatever quantity, took four to five hours to appear in the excreta, and its excretion went on for a length of time varying with the dosage; this was seven hours for a dose of 0·001 c.cm. per gramme of body-weight, which roughly corresponds to the dose usually prescribed in man. The normal interval between ingestion of food and its excretion was ascertained to be five to six hours, and a dose of paraffin reduced this to four to five hours, a fact which shows that paraffin is definitely a laxative. The theory that it acted as a lubricant between the intestinal wall and the fæcal column was not supported by actual inspection. Sections from the stomach and all parts of the bowel showed the paraffin emulsified extremely finely throughout the whole fæcal mass; never in its whole transit did it form a confluent surface. Only when massive doses were given did it escape as a liquid from the anus. Paraffin, though difficult to emulsify in water, divides readily enough when mixed with digestive secretions, and this is the causes of its immediate emulsification in the stomach. Paraffin softens the end of the column and is, therefore, therapeutically effective, says Dr. Schlagintweit, but its softening action is due not to its lubricating, or even its emulsifying properties, but to its power of holding water in emulsified form. Stools that contain paraffin contain also 15 per cent. more water than usual, and water in this state is very resistant to absorption by the bowel. He prefers emulsified paraffin to the pure oil, on the ground that a ready-made emulsion does not leak in overdose. Dr. Schlagintweit's results, although they cannot be transferred without due reserve to human experience, may yet serve to provoke further inquiry into the mechanism of so-called intestinal lubricants.

HYPOTENSION OF AMERICANS IN PEKING.

IN the current issue of *Archives of Internal Medicine*, Dr. C. L. Tung comments on the fact that in examining groups of healthy Chinese the average blood pressure, both systolic and diastolic, is lower than that of Occidental races. The average systolic pressure of healthy adults in the United States is approximately 125 and the diastolic 80. For Chinese of the same age the pressures are 112 and 70 respectively.

These facts have led him to study the effects on blood pressure of residence in Peking, in 58 Americans. Readings were taken in America and again in Peking after three years there. The readings showed a decrease in both systolic and diastolic pressure in over 60 per cent. and an increase in only 15 per cent. There was an average decrease of 9 mm. of mercury in systolic, and 11 mm. in diastolic, pressure, in spite of the increase of age. Dr. Tung points out that the fall of pressure cannot be due to climatic changes, for Peking is in the temperate zone, but suggests that the quieter life there, as opposed to the rush of American life, may be the cause. More details about the occupation and mode of life of each individual might help to solve this problem.

METROPOLITAN HOSPITAL NURSES' HOME.

WE are asked to say that the nurses' home which the Metropolitan Hospital proposes to build at a cost of £60,000 will accommodate 114 members of the nursing staff together with the necessary study and recreation rooms and not only 60 nurses and six sisters as previously stated.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 26th, to SATURDAY, Oct. 1st.—WESTMINSTER HOSPITAL, S.W. Course in Medicine, Surgery, and the Specialties. All day course from 10.30 A.M. to 5.30 P.M. Lectures, demonstrations, and operations.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. Course in Orthopædics. All day, operations in the morning, followed by clinical demonstrations and clinical work in the afternoons.—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, W. Course in Ophthalmology. Afternoons only. Clinical demonstrations at 2 P.M. followed by operations. Special demonstrations at 5 P.M.—BETHLEM ROYAL HOSPITAL, St. George's-fields, S.W. Psychological Medicine, Tuesdays and Saturdays at 11 A.M. Further information from Secretary, Mayfair 2236.

WEST LONDON HOSPITAL, POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Sept. 26th.—10 A.M., Mr. MacDonald: Genito-Urinary Operations. 11 A.M., Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Donald Armour: Operations.

TUESDAY.—10 A.M., Medical Registrar: Ward Demonstration. 2 P.M., Mr. Sinclair: Surgical Out-patients. 3 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—10 A.M., Dr. Owen: Medical Diseases of Children. 2 P.M., Mr. Gibb: Eye Department.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Dr. Ironside: Medical Out-patients. 3 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Addison: Operations. Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy and Ward List. 10 A.M., Dr. Owen: Medical Diseases of Children.

Operations, Medical, Surgical, and Special Out-patients, daily, 10 A.M. to 5 P.M.; Saturdays, 10 A.M. to 1 P.M.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Sept. 26th.—2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Sept. 27th.—4.15 P.M., Dr. J. C. Bramwell: Dyspnœa.

FRIDAY.—4.15 P.M., Dr. K. B. Pinson: Anæsthetics: When not to use Chloroform.